

Part 2012



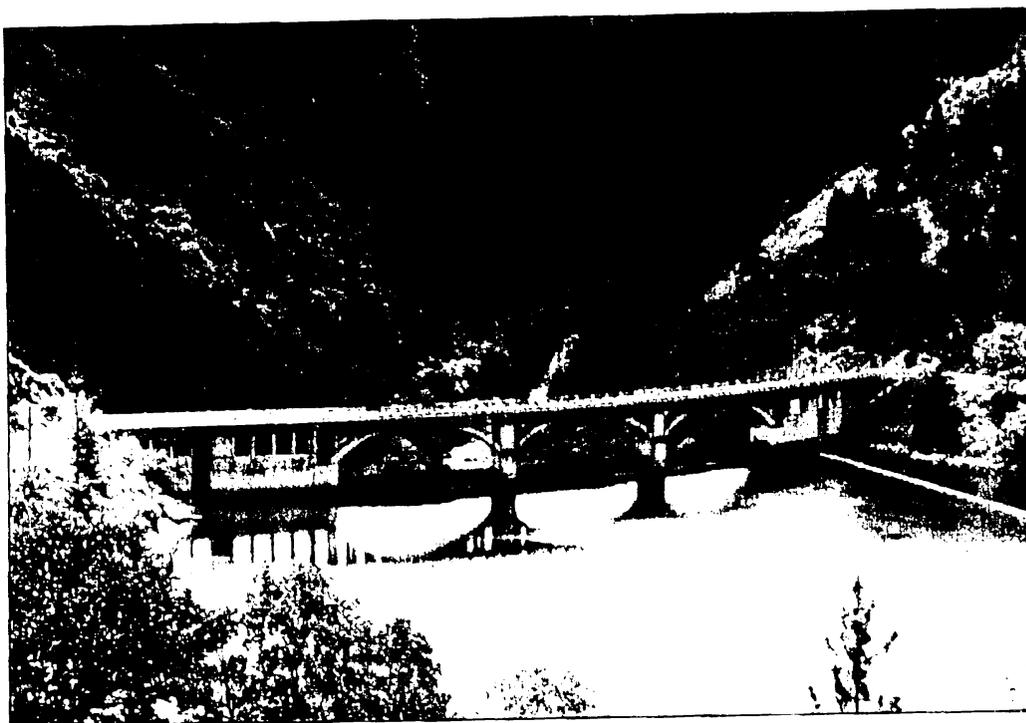
**Federal Energy
Regulatory
Commission**

**Office of
Energy
Projects**

June 2004

FERC/FEIS - 0158F

Final Environmental Impact Statement



**Pit 3, 4, 5 Hydroelectric Project
(FERC No. 233-081)
California**

888 First Street N.E., Washington, DC 20426

Fire Events

Nine large fires (over 300 acres in size) were documented in the project vicinity between 1911 and 2001, seven of which were located around Lake Britton, one just north of Pit 4 reservoir, and one in the Pit 5 tunnel area. A total of 220 small fires (less than 300 acres in size) were reported in the project vicinity since 1981, 90 percent of which were less than 1 acre with the majority being less than 0.2 acre. Of the small fires reported, 60 percent were in the Lake Britton area, 28 percent in the Pit 5 area, 7 percent in the Pit 3 area, and 5 percent in the Pit 4 area. Recorded small fires were more frequent around the Big Bend community and along highways and less frequent in recreation areas and project facilities within the canyon. The number of small fires averaged 6.6 per year for the 8 years of record during the 1980s, and 14.7 per year during the 1990s. In 2000 and 2001, the number of small fires has averaged 9.5 per year.

Aesthetic Resources

For its aesthetic resource assessment, PG&E identified characteristic landscape units to delimit zones of generally similar landscape conditions and key viewing points (KVPs) within the project area. PG&E identified four landscape units: upper Lake Britton, lower Lake Britton, Pit 3 and 4 River corridor, and lower Pit River corridor. The KVPs represent a sampling of views within the project area and are based on evaluation of the aesthetic characteristics of the landscape units, use patterns, and aesthetic sensitivity. Table 47 provides a summary, and figure 16 shows the location of the KVPs.

Table 47. KVPs identified within the project area. (Source: PG&E, 2001)

No.	KVP	Description
1	Hat Creek overlook	View of upper Lake Britton and Hat Creek
2	Dusty Campground	View upstream to wider reservoir
3	Jamo Point boat launch	View of accessible fishing pier and Pines picnic area across Lake Britton
4	North Shore Campground	View from inside cove looking up beach toward middle of Lake Britton
5	Burney Falls State Park	View along popular swimming beach
6	PCT	Point of first Pit 3 dam view when traveling west on the PCT
7	Lower Lake Britton	View from Clark Creek Road shoulder of Lake Britton
8	Pit 3 Canyon	View from Pit 3 dam looking into bypassed reach
9	Pit 3 bypassed reach	View from just upstream of the mouth of Rock Creek

No.	KVP	Description
10	Pit 3 powerhouse	View looking at powerhouse and road
11	Pit 4 dam	View looking at Pit 4 dam from River Road shoulder
12	Pit 5 reservoir	View of Pit 5 reservoir from road on Pit 5 dam
13	Tunnel Reservoir	View of Tunnel Reservoir from River Road

Lake Britton Area

The upper Lake Britton landscape unit is dominated by views of the slow, slightly meandering Pit River through the open and flat valley. Although backwater from the Pit 3 dam (Lake Britton) influences this area, it appears undisturbed with a large variety of vegetation types. The area is scenic and the reservoir appears natural, particularly at full pool. The Dusty Campground is well integrated into the surrounding landscape. The surrounding vegetation and topography mutes the sounds of people and vehicles.

The lower Lake Britton landscape unit is visually diverse with variations in shoreline topography, geologic conditions, vegetation, and human development. There are no residences, but there are developed recreational areas along the shoreline, and the lake is a popular destination for outdoor enthusiasts. Several KVPs are located in this area, including views from Jamo Point boat launch, North Shore Campground, Burney Falls State Park, PCT, and lower Lake Britton. A key aesthetic feature in Burney Falls State Park is the 129-foot-high Burney Falls. Pit 3 dam serves as the Pit River crossing for the PCT, a 2,638-mile-long National Scenic Trail that runs from Canada to Mexico. The Pit 3 dam has an arched shape and spillway openings that provide interesting and historic attributes. The intake structure, transmission line, and telephone line compete with the natural features of the area; however, they are only visible from the immediate surrounding area. Likewise, several wood poles and wires for the project transmission and telephone lines converge at a point directly adjacent to and overhead of the PCT, presenting a high level of contrast to the surrounding area.

Lake Britton's maximum surface elevation is 2,737.5 feet NGVD; however, at this elevation, part of the state park lands begin to flood, so the maximum level normally achieved is 2,736.5 feet NGVD. Although Lake Britton can be drawn down to elevation 2,724.5 feet NGVD, it is typically not drawn down below 2,730.5 feet. In the upper portion of Lake Britton, the average exposed shoreline in these areas extended out 20 to 40 feet at low pool, exposing mud, gravel, cobbles, or small rocks. At low-water conditions, most of the coves as well as many large, flat sand and gravel bars are exposed in the upper portion of the lake. Lower lake levels are less noticeable in the lower portion of Lake Britton because the shorelines are steeper so that the change is more vertical than horizontal.

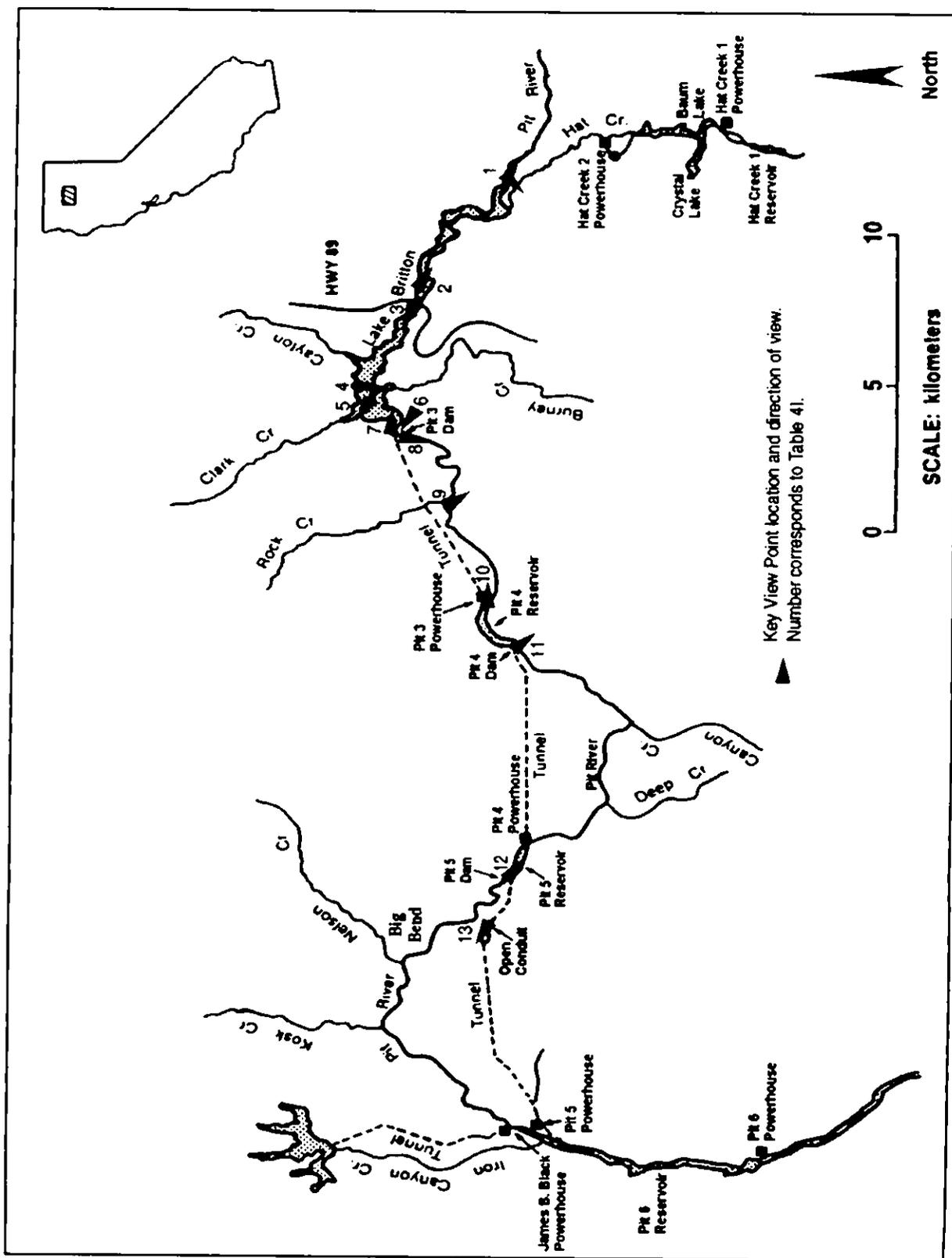


Figure 16. Location of key viewing points throughout the project area. (Source: PG&E, 2001)

Pit River Canyon

Unlike the flat water reaches of the Lake Britton area, the Pit River Canyon is characterized by the Pit River channel meandering through the forested canyon. The Pit 3 and 4 River corridor landscape unit extends from Pit 3 dam to Pit 4 powerhouse and includes narrow areas of the canyon causing a dramatic contrast between the heavily forested canyon walls and the river below. The area provides dispersed angling, hiking camping, and whitewater boating opportunities. Developments in this reach include the project powerhouses, dams, switchyards, and transmission lines. KVPs in this reach include views from the Pit 3 bypassed reach, Pit 3 powerhouse, and Pit 4 dam. The Pit 3 and 4 dams and powerhouses, as well as the associated penstocks and switchyards, are highly evident within this corridor. The 230-kV transmission line is visible, but does not dominate the landscape because the view is screened by trees.

The lower Pit River Canyon landscape unit, which includes the reach from the Pit 4 powerhouse to the Pit 5 powerhouse is less dramatic than the upper reach and much less heavily traveled by recreationists. The Pit River bisects the heavily wooded, hilly landscape, which is quite typical of the region. It includes the Pit 5 dam and reservoir, Tunnel Reservoir, the Pit 4 transmission line, and the Pit 5 bypassed reach. There are limited views of the river and project facilities due to the heavily wooded surroundings. KVPs in this area include views from the Pit 5 reservoir and the Tunnel Reservoir. Views of the Tunnel Reservoir are only available in a few areas because the shorelines are heavily wooded and traffic is directed away from the dikes. However, views of the diked areas from River Road are visually contrasted with their surroundings. The Pit 5 powerhouse is closed to the public, thus only limited views of the structure, switchyard, and penstocks are available in the corridor.

The Pit 4 reservoir, about 1.5 mile-long and 105 surface acres at full pool, can fluctuate between elevation 2,422.5 feet and 2,404.5 feet NGVD. The Pit 4 reservoir's normal operation elevation range is 6 feet, although on a daily basis generally fluctuates only several feet. PG&E maintains a 150-cfs base flow year-round in the Pit 4 reach (about 7.2 miles from the Pit 4 dam to the Pit 4 powerhouse), and the flow is typically augmented by winter and spring spill run-off from the Pit 4 reservoir.

The Pit 5 reservoir, about 1.1 mile-long and 32 surface acres at full pool, can fluctuate between elevation 2,040 feet and 2,030.5 feet NGVD, which is the normal operating elevation range, although on a daily basis the reservoir generally fluctuates only several feet. PG&E currently maintains a minimum flow release of about 100 cfs from Pit 5 dam and a minimum flow of 120 cfs below Nelson Creek at Big Bend. Winter and spring spill run-off from Pit 5 reservoir generally augment the reach's flow. The Tunnel Reservoir, about 48 surface acres at full pool, generally fluctuates a few feet daily.

LRMP Visual Quality Objectives

The Lassen and Shasta-Trinity LRMPs provide guidelines for the preferred Visual Quality Objective (VQO) of land managed under each prescription. VQOs are based on the degree of acceptable alteration permitted within the natural landscapes and are applied to all project proposals and activities on FS lands. The Lassen National Forest LRMP assigns three VQOs to the project area or lands influenced by project operations, including Retention, Partial Retention, and Modification, while the Shasta-Trinity LRMP uses Partial Retention and Retention for lands within the project area or influenced by project operations. Table 48 summarizes VQO classifications for lands within the project area or lands influenced by project operations. The three VQOs that apply to the project area are further described in table 49.

Table 48. Summary of Lassen and Shasta-Trinity National Forests VQO classifications and guidelines for FS lands within the project area or influenced by project operations. (Source: FS, 1992, 1995)

Location	VQO designation
Scattered federally owned parcels around Lake Britton and upper Lake Britton, not included in Partial Retention areas listed below.	Modification
Undeveloped areas north of North Shore Campground, Pines picnic area, and upper Lake Britton	Partial Retention
Pit 3 dam to Pit 3 powerhouse tunnel area	Some Retention and Partial Retention in upper section of reach, but mostly Modification (around hydroelectric facilities)
Pit 3 dam to Pit 3 powerhouse bypassed reach	Retention
Pit 3 powerhouse to Pit 4 powerhouse tunnel area	Mainly Partial Retention, with pockets of Retention just downstream of Pit 4 dam and around Pit 5 powerhouse
Pit 3 powerhouse to Pit 4 powerhouse bypassed reach	Partial Retention with Retention in more scenic areas (mostly south of bypassed reach and around Pit 5 powerhouse)
Small area near Deep Creek Campground	Retention

Table 49. Description of VQO classifications and guidelines. (Source: FS, 1992; FS, 1995)

VQO Designation	Definition
Retention	Allows management activities that are not visually evident. Activities may only repeat form, line, color, and texture found frequently in the characteristic landscape. Changes in size, amount, intensity, direction, and pattern should not be evident.
Partial Retention	Allows management activities that remain visually subordinate to the characteristic landscape. Activities may repeat form, line, color, and texture common to the characteristic landscape but changes in their qualities of size, amount, intensity, direction, and pattern remain visually subordinate to the characteristic landscape. Activities may also introduce form, line, color, and texture found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape.
Modification	Human activities may visually dominate the original characteristic landscape. Vegetation and landform alteration must borrow from naturally established form, line, color, texture, and scale.

3.3.6.2 Environmental effects:

Land Use

Land Management

The FS recommended, as a preliminary Section 4(e) condition, that PG&E, within 3 months of license issuance, consult with the FS to bring special-use authorizations for project related occupancy and use of FS lands up to current standards through re-issuance of obsolete authorizations. The FS stated that PG&E should obtain the executed authorizations before beginning ground-disturbing actions related to permitted activities or within 1 year of license issuance. Furthermore, the FS recommended that PG&E should not begin ground-disturbing activities authorized by the license and special-use authorization until 60 days following the date the authorization is filed with the Commission. The FS final 4(e) conditions do not include this recommendation.

The FS recommended, as a preliminary Section 4(e) condition, that within 3 months of license issuance, PG&E file with the Commission and provide to the FS an existing document or initiate the process to provide an easement across the Pit 3 dam for public use

of the PCT on that project facility. If a new easement is necessary, PG&E would issue the easement within 2 years of license issuance. The FS final 4(e) conditions do not include this recommendation.

The FS recommended, as a preliminary Section 4(e) condition, that within 2 years of license issuance, PG&E develop and file with the Commission, a land adjustment proposal to address possible land exchanges or other management actions that would result in a more efficient land management by concerned parties. The proposal would include consideration of a three-party land exchange between Burney Falls State Park, the FS, and PG&E and would require consultation with the involved parties and filing of the proposal to the Commission. Currently, the Burney Falls State Park includes a 76-acre, FS-managed inholding, which the park uses under a special-use permit. C DPR recommended that PG&E facilitate the transfer of these lands to C DPR as part of a settlement agreement. C DPR recommended that PG&E trade 76 acres of timber property to the FS, and then PG&E would deed the 76 acres inholding to C DPR for recreation purposes.

In response to the draft EIS, the FS recommended, as a revised 4(e) condition, that PG&E develop a LHMP for mitigating project effects on FS resources. This plan would consolidate a number of the FS recommended monitoring and resource mitigation plans into a single condition to facilitate tracking and coordination of the individual plans. The individual plans to be included in the LHMP would include:

- erosion and sediment control plan (discussed in section 3.3.1, *Water Resources*);
- spoil pile management plan (discussed in section 3.3.1, *Water Resources*);
- biological monitoring and adaptive management plan (discussed in section 3.3.2, *Aquatic Resources*; 3.3.3, *Terrestrial Resources*; and 3.3.4, *Threatened and Endangered Species*);
- vegetation management plan (discussed in section 3.3.3, *Terrestrial Resources*);
- interagency bald eagle management plan (discussed in section 3.3.4, *Threatened and Endangered Species*);
- cultural resources management plan (discussed in section 3.3.7, *Cultural Resources*);
- recreation management plan (discussed in section 3.3.5, *Recreational Resources*);
- roads and facilities management plan (discussed below);
- fire management and response plan (discussed below); and
- visual management plan (discussed below).

By letter, dated June 19, 2003, PG&E supports the approach taken in the draft EIS of using the LHMP as a mechanism for putting all the various resource management plans into a single coordinated plan.

The FS final 4(e) conditions adjust the overarching plan concept to break out either individual or various groups of plans into separate 4(e) conditions. The FS indicates that this was done only for clarity. Plans formerly included in the LHMP that are now separate final (4) conditions include the following: erosion and sedimentation control (final 4(e) condition No. 16); cultural resources management plan (final 4(e) condition No. 24); recreation management plan (final 4(e) condition No. 26); and roads and facilities management plan (final 4(e) condition No. 27).

Final 4(e) condition No. 20 would be a land resource plan that would include: a tunnel spoil pile management plan; a fire management and response plan; a visual management plan; and a sign plan. We did not discuss the sign plan in the draft EIS. The recommended sign plan would be prepared in consultation with the FS, and CDPR, and other interested parties within 1 year of license issuance. The plan would specify the location, design, size, color, and message for the following types of signs: information and education; fire prevention; regulatory and warning; project license; road; recreation; directional; and safety. The sign plan would address maintenance standards, so that all signs are maintained in a neat and presentable condition, and sign format is consistent throughout the project.

Final 4(e) condition No. 23 would be a biological resources management plan, that would include: provisions for forming a technical review group for adaptive management purposes; plans for aquatic biota, foothill yellow-legged frog, and western pond turtle monitoring; an updated interagency bald eagle management plan; a terrestrial wildlife mitigation and monitoring plan; and a vegetation and noxious weed management plan.

The FS recommends, as a final 10(a) condition, that PG&E should not be allowed to reinstate grazing on project lands, which was eliminated during the last relicense.

In its November 25, 2002, letter responding to the comments and recommendations made by various parties in response to the Commission's REA notice, PG&E stated that the FS original recommendation to provide an easement across the Pit 3 dam for public use of the PCT is unnecessary because the public has access via the county road that crosses the dam. PG&E also stated that regarding the land exchange condition, PG&E is already under contract with CDPR for a land exchange that would give title to the CDPR land it currently leases from PG&E. Additionally, PG&E commented that it does not have control over land CDPR leases from the FS.

Our Analysis

The FS management plans include strategies for road management and maintenance, management of recreational and aesthetic resources, protection of cultural resources, and fire suppression and prevention. Our analysis and final recommendations (presented in chapter 5.0, *Staff's Conclusions*, pertaining to implementation of a road management and maintenance plan, visual resource management plan, fire management and response plan, HPMP (discussed in section 3.3.7, *Cultural Resources*), and recreation management plan (discussed in section 3.3.5, *Recreational Resources*) would be consistent with the FS strategies and LRMPs. The general purpose of Burney Falls State Park is to present the falls to the public as a scenic attraction and to protect the natural, scenic, and cultural resources associated within the lands of the park and implement a program of resource management to perpetuate park values. The Burney Falls State Park General Plan contains directives for providing adequate vehicular and pedestrian circulation for visitors, preservation and avoidance of sensitive cultural sites, and wildfire management with prevention and suppression procedures, all of which are consistent with our recommended plans.

The FS stated, that although several of the special-use permits issued to PG&E (i.e., warning sirens) are current, others, such as certain road authorizations, are obsolete. The FS original recommendations to update and implement special-use authorizations would help to ensure that current land use practices within the project boundary are consistent with the FS LRMPs. However, although the FS plans and regulations require that private use of FS lands be covered by a current authorization, such requirements are not mandated as part of the Commission's authorization for issuance of a license. Therefore, we do not recommend that PG&E be required to update these authorizations in any new license that may be issued for this project; however, we encourage PG&E to consult with the FS to update the FS special-use authorizations.

PCT is a national scenic trail that provides scenic and recreational opportunities and provides public access to portions of the project area, particularly for the portion of the PCT that runs over the Pit 3 dam. Currently, public access is available across the Pit 3 dam via the county road that crosses the dam. We agree with PG&E that an easement, as originally recommended by the FS, is not necessary because the PCT crosses the Pit 3 dam over a public county road.

The FS and CDPR originally proposed land exchanges within Burney Falls State Park to eliminate the FS inholding and PG&E lease. PG&E is under contract with CDPR for a land exchange that would give title of lands that currently CDPR leases from PG&E to CDPR, and these parties are currently awaiting the approval of the California Public Utilities Commission on this land exchange. We understand the desire to consolidate the

management of lands within Burney Falls State Park that are leased by PG&E and lands under special-use permit from the FS. We support the idea of interested parties exploring possible land exchanges to resolve longstanding management difficulties and land ownership patterns. Although we may support such land transfers if included in a broader reaching agreement that resolves multiple resource issues, we are unable to recommend actions by parties other than PG&E and therefore, we do not recommend that such a land exchange be required as part of the license issuance.

PG&E has not allowed grazing on project lands since the late 1980's to protect sensitive resources and water quality. Since that time, riparian habitat has improved, disturbance to sensitive resources has been reduced, and recreational values have been improved in areas where cattle grazing once conflicted with human use. PG&E has not suggested returning cattle grazing to project lands, and we agree with the FS that this practice should not be reinstated.

In the draft EIS, we recommended consolidating several plans that we recommended adopting into an LHMP to provide a single place in which all the land and habitat related management plans would be located. The consolidation of all the resource plans into a single document would facilitate the implementation of related plans and help ensure that management of project resources are coordinated throughout the term of the license. In response, the FS initially modified their Section 4(e) conditions to be consistent with the draft EIS. However, the final 4(e) conditions break out some of the individual plans that we suggested be included in the LHMP, and grouped others into less extensive plans (e.g., biological resources and land use resources). We agree that our originally recommended LHMP would include a large number of individual plans, and we agree that the organization of the FS final 4(e) conditions improves that clarity of presentation. However, we continue to conclude that there would be benefits to including the numerous individual land and habitat management-related plans in a single overarching LHMP. Our suggested approach could still be consistent with the organization of the FS final 4(e) conditions. For example, the FS recommended land resource plan could represent a section in the LHMP, with subsections that addressed the four individual plans that would be developed under this inclusive plan. The land resource plan could then be included in the LHMP.

Our original approach to project-related signage was that the various types of signage could be addressed in other specific plans to which the signs applied (e.g., project informational signs could be addressed in an I&E plan, recreation-related signs could be addressed in a recreation resource plan, road signs could be addressed in a road management plan). However, given the diversity of sign types that would be required at this project, as well as the various signage criteria that would need to be adhered to (e.g., Commission criteria, FS criteria, CalTrans criteria) and the fact that much of the Pit 3 and 4 developments are on National Forest System Lands, and the Pit 5 development is not, we

agree that a signage plan, as specified in the FS final 4(e) condition No. 20, is warranted to ensure a coordinated approach to project-related signage.

Project Roads

Road and Vehicle Management—In its October 11, 2002, response to the REA notice, PG&E states that it based their terms and conditions, in part, on the principle that primary access routes within the project area should provide safe passage by passenger cars, sport utility vehicles, and pickup trucks. PG&E proposed to develop, in consultation with the FS, a road management and maintenance plan within 6 months of the license issuance. The plan would address minimum standards for paving width, culvert dimensions, turn out locations, and designated parking areas. The plan would include designated areas for the disposal of rock and soil debris removed from the road as well as a signage plan. In its June 19, 2003, letter commenting on our recommendations in the draft EIS, PG&E affirmed that it proposed to develop a road management and maintenance plan, which would include identification of access roads and parking areas to be closed to vehicular traffic.

The FS recommended, as a preliminary Section 4(e) condition, that PG&E complete a roads and facilities management plan within 1 year of the license issuance. This plan would be approved by the FS and consist of a map showing all roads associated with the project and within the project boundary. In addition, through this plan PG&E would identify road uses (i.e., recreation and facility access); provide for surveys of road conditions including construction or reconstruction needs, safety issues, and jurisdictions (i.e., county and state); provide a map depicting a traffic safety and signage plan; map all drainages, bridges and culverts; address future project road improvements triggered by use levels reviewed in 5-year traffic use surveys and 6-year recreational surveys; and address measures to control erosion related to project facilities.

The FS final 4(e) condition No. 27 is similar to its preliminary recommendations pertaining to road planning. However, the FS expands the scope of the plan to include National Forest System roads or project roads affecting National Forest resources. The mapping specified in this plan would be expanded to include watering sources, disposal sites for organic materials, and disposal sites for surplus rock and soil from road maintenance within and adjacent to the project boundary, including designation of use, season of operation, and public use. The road and facility management plan specified in the final 4(e) condition would also include the following measures beyond what was specified in the preliminary recommendation: a description of the types of material allowed to be disposed of in the spoil pile; a description of how organic materials would be treated; a water quality monitoring plan that includes runoff management; a traffic safety plan; and an adaptive management component to allow changes, should the use of standards necessitate.

Interior recommended that PG&E complete a plan within 1 year of the license issuance to identify access roads and parking areas to be closed to vehicular traffic. The plan, which would be developed in consultation with the Tribe, NPS, and the FS, would include the means for closing roads, through measures such as locked gates, boulders, and signs. Interior recommends implementing road closures to protect cultural resource sites, by limiting access to more sensitive areas.

Project Road Rehabilitation— The FS recommended, as a preliminary Section 4(e) condition, that within 3 years of license issuance, PG&E take appropriate measures to rehabilitate and maintain existing project roads, on or affecting FS-managed lands; provide for current public use levels and safety; protect facilities from failure; and reduce existing resource degradation. The FS identified the following general monitoring and rehabilitation measures that should be implemented:

- upgrade signage and gates to conform to the latest edition of the manual of Uniform Traffic Control Devices;
- implement the FS's *Best Management Practices - Water Quality Management for Forest System Lands in California* for all road construction and maintenance activities;
- complete normal maintenance activities such as repair or replace damaged culverts, remove existing vegetation to allow adequate sight distances, repair fog lines, replace faded signs, add milepost markers for maintenance, public service, and emergency response;
- install gates or other vehicle control measures where necessary to achieve erosion protection;
- sign project roads and related recreational access points to assist non-local recreationists in locating destinations and project waters.
- include a vehicle and equipment wash station at all construction projects or where there are ground-disturbing activities to prevent the introduction of noxious weed species;
- inspect bridges every 4 years in accordance with state and federal regulations with a report submitted to the FS; and
- review traffic and recreation use surveys for campground access roads every 10 years to determine if road conditions need to be improved to meet current needs.

The FS also made a preliminary 10(a) recommendation, that PG&E implement those measures identified in the first five bullets above for project roads not on or not affecting FS-managed lands. The FS final 10(a) recommendation is similar to its preliminary recommendation. However, the FS makes several additional road reconstruction and maintenance recommendations for the Lake Britton/Hat Creek fish barrier access road (included in previous recommendations), Hagen Flat Road (installation of a road name sign

at appropriate intersections was previously recommended; extending the pavement for about 1.5 miles from near PSEA Camp Pit to the west end of the Pit 5 dam to control dust generated from use of this road is a new recommendation), and Pit 5 powerhouse road.

The FS final 4(e) condition No. 27 substantially modified the project road rehabilitation measures in its preliminary recommendation. Project road rehabilitation processes would be addressed in the roads and facilities management plan. The FS now specifies that limited operating periods for sensitive wildlife resources should be included when planning rehabilitation projects, as well as provisions to prevent infestation and spread of noxious weeds. The FS also specifies that PG&E should develop a rehabilitation schedule to bring existing roads and associated facilities (i.e., culverts, gates, bridges, crossings, cribwalls) into compliance with FS standards that achieve the FS RMOs for each project road that the FS concludes affects National Forest System Lands (these roads are included in table 46, and in general are those which the FS is listed under the land ownership column). The schedule would create a timeline for bringing existing roads into compliance within 5 years of license issuance. Health and safety rehabilitation needs would be completed within 1 year of license issuance, water passage needs would be completed within the second year from license issuance, road surfacing needs within the third year from license issuance, and all lower priority needs completed in years four and five from license issuance. The FS lists nine general rehabilitation categories that would be addressed in this element of the road and facilities management plan.

In addition, final 4(c) condition No. 27 calls for PG&E to develop an annual road operation and maintenance schedule for on-going needs to maintain roads on National Forest System Lands to comply with FS standards and RMOs. Annual maintenance should include repair and replacement of damaged culverts identified in road logs and removal of exiting vegetation to allow adequate sight distances. Limited Operating Periods for wildlife species and noxious weed prevention provisions should be included in planning and performing maintenance activities.

The FS recommended, as a preliminary Section 4(e) condition, specific monitoring and rehabilitation measures that should be implemented at the following project road segments on FS-managed lands: Pit 3 Reach Road; River Road; Rock Creek Penstock Road; Pit 4 Valve House Road; Dusty Campground Road; North Shore Campground Road; Jamo Point/Pines picnic area access road; and Rock Creek, Screwdriver Creek, and Underground Creek Bridges. These specific recommendations included measures such as repaving, improving sight distances, installing additional signage, constructing turnouts, repairing or adding crib walls, installing culverts, and stabilizing eroding cut and fill slopes. FS final 4(e) condition No. 27 only lists the following specific rehabilitation needs: at Ruling Creek Curve, stabilize the riverbank to protect the road from failure at flood flows; expand the existing paved road from the Pit 3 powerhouse to the gravel bar turn-off in the

Pit 4 reach; and bring the Pit 3 and 4 reach roads into compliance with the general rehabilitation items and FS RMOs.

Interior recommended, as part of their recommended recreation management plan (see section 3.3.5, *Recreational Resources*), that PG&E improve appropriate roads in the upper Lake Britton area and the Hat Creek fish barrier access area by grading and adding red cinder (or other appropriate materials) to limit rutting and muddiness, thereby discouraging user-created roads. Interior recommended that PG&E consult with the FS, FWS, the Tribe, CDFG, the Hat Creek TAC, and the PRCT to determine which roads should be closed to public vehicle access in the upper Lake Britton/Sand Pit Springs to Soldier Creek area. Interior also recommended that PG&E consult with the same entities to determine the most appropriate location for a single road in the lower Hat Creek fish barrier area, from Highway 299 to the Hat Creek fish barrier and creekside. Interior recommended revegetation of any user-created roads and the placement of boulders along both sides of the improved roads to prevent vehicular access to sensitive resource areas. In addition, Interior recommended that all licensee lands remain open to walk-in access.

In its November 25, 2002, letter responding to the comments and recommendations that various parties made in response to the Commission's REA notice, PG&E stated that the proposed measures may result in additional traffic. PG&E agreed that some changes and improvements are necessary, but not to the extent that the FS originally proposed. PG&E presented these findings in its public safety and traffic management study included as part of the license application. PG&E concluded that additional discussion is needed between the FS and PG&E to resolve their differences on road segments that need improvements. In its comments on our draft EIS, PG&E, by letter dated June 19, 2003, agreed to consult with the FS, the Tribe, and any other interested agencies to develop road standards, specifics for road rehabilitation, and maintenance standards.

Traffic Use Surveys—The FS recommended, as a preliminary Section 4(e) condition, that every 5 years from license issuance, PG&E should file a traffic use survey that the FS approves. The survey would include, at a minimum, installation of traffic counters at the Dusty and North Shore Campground access roads, the Pit 3 Reach Road upstream of the dam, the USGS gaging station at the Pit 4 reach, and the north side of Pit 5 dam; data on the number of vehicles per day and type of vehicle; and traffic counts for a minimum of 60 survey days per year including opening of fishing season, Memorial Day weekend, July 4th holiday weekend, Labor Day weekend, and random weekends and weekdays from April to October. The FS final 4(e) condition No. 27 is more general than its preliminary condition, and changes the reporting frequency from every 5 to every 6 years. The survey locations would be specified by the FS and would be designed to determine the number and type of vehicles per day and determine use trends based on a minimum of 60 survey days per year. The traffic survey study periods and reporting

requirements would be specified in the roads and facilities management plan. A road capacity and use review would be conducted every 10 years to determine if the roads continue to meet current RMOs.

In its November 25, 2002, letter responding to the comments and recommendations made by various parties in response to the Commission's REA notice, PG&E agreed that conducting traffic use surveys would be beneficial. In its comments on our draft EIS recommendations, PG&E agreed to include in the proposed road management and maintenance plan a description of the specific methods that it would use to conduct traffic-use surveys every 6 years.

Off-Road Vehicle Management—The FS recommended, as a preliminary Section 4(e) condition, that within 2 years of license issuance, PG&E file with the Commission an off-highway vehicle and vehicle management plan approved by the FS for the project area and agency lands bounded by Lake Britton on the north, Highway 299 on the south, and Highway 89 on the west. The plan would be developed in consultation with appropriate agencies and law enforcement agencies. The FS recommended that the plan include locations where existing use patterns are creating resource damage; restrictions and controls for protection of bald eagles, cultural resources, upland oak and riparian habitats, and other resources affected by vehicle use; time frames for seasonal road closures; rehabilitation needs for areas already disturbed by vehicle activity, and specific measures to address the Hat Creek fish barrier area, where resource disturbance is occurring on PG&E project land and adjacent FS lands. The FS final 4(e) condition No. 27 is similar to its preliminary recommendation, but calls for this plan, which would be a component of the roads and facilities management plan, to be developed within 1 year of license issuance (instead of 2) in consultation with the FS and the Tribe.

Interior recommended, as part of their recommended recreation management plan (see section 3.3.5, *Recreational Resources*), that PG&E develop an ORV management plan for Lake Britton. The plan, which would be developed in consultation with county law enforcement agencies, the Tribe, and the FS, would include a strategy to manage ORV use and protect cultural and wildlife resources.

In its November 25, 2002, letter responding to the comments and recommendations made by various parties in response to the Commission's REA notice, PG&E agreed that a road use and access plan would help control much of the unauthorized use of ORVs. PG&E agreed to develop a plan in consultation with interested parties, including the Tribe and the FS.

In its May 19, 2003, letter in response to the draft EIS, the FS comments that they have been working with PG&E and the Tribe to resolve concerns over ORV use in the

western portion of the lower Hat Creek area. The FS states that they are not requesting funding for their actions and proposes to take any or all of the following actions to help resolve this issue in the project area, including:

- decommission less than two miles of existing dirt track(s) accessing PG&E and Project lands and waters only. These dirt (non-surfaced) tracks, dead-end onto PG&E and Project lands and waters;
- block road junctions, install water bars and other water directing structures to redirect water off dirt tracks and to avoid erosion into Project waters;
- obscure dirt tracks through ripping, or other measures that will minimize long-term erosion potential;
- remove culverts, if any;
- implement an ORV closure to allow an avenue for citing offenders;
- sign the area of closure or other restrictions;
- FS patrols of FS lands to discourage use and to cite violators; and
- notify public through news releases or other media of changes.

In its June 19, 2003 letter in response to the draft EIS, PG&E comments that they intend to restrict vehicular access to designated roadways and prohibit off road activities within the project area to protect sensitive resources. PG&E states that they would consult with the FS, CalTrans, and Shasta County to develop interim measures to address the current condition of the intersection of Jamo Point/Pines picnic area access road with State Route 89.

Our Analysis

Many of the project roads were built during initial project construction with minimal road improvements or rehabilitation to bring them up to current standards and into compliance with FS standards based on RMOs. PG&E, in the license application, identifies road segments that may need safety improvements, such as where there is evidence of substantial spalling due to freeze-thaw on the Clark Creek Road crossing, longitudinal cracking in the pavement on the Pit 3 reach of River Road, and evidence of aging and deterioration of the Pit 5 Powerhouse Road. In its October 11, 2002, response to the REA notice, PG&E commits to the principle of providing safe passage along access roads and proposes a road management and maintenance plan including addressing minimum roadway standards. Additionally, by the year 2035, PG&E projects recreation-day increases of 33 to 55 percent around Lake Britton and up to 44 percent in Pit River Canyon over the year 2000 levels (see section 3.3.5, *Recreational Resources*). An increase in users as well as the passage of time would likely warrant additional road rehabilitation to help ensure that the capacity of the roads is not exceeded and to maintain the roadways to current standards and consistent with FS RMOs. We conclude that the traffic use surveys that the FS

recommends would help identify where and when roads have reached their capacity or fallen below an acceptable level of service based on FS RMOs and thus, provide a trigger for additional rehabilitation needs. We also conclude that road planning over the term of the license would ensure that maintenance and safety needs are identified and taken care of in a timely manner to protect the public and ensure that project roads meet expected future demands.

PG&E states that some unauthorized ORV use occurs within the western portion of the lower Hat Creek area (see section 3.3.5, *Recreational Resources*). PG&E developed and implemented a Vehicle Access Plan as a condition of the existing license to keep vehicles on designated roadways and protect sensitive resources. There are existing recreational facilities located near the NRHP-listed District and other known important traditional cultural sites in the project area (see section 3.3.7, *Cultural Resources*). In the draft HPMP, dated October 11, 2002, PG&E proposes to install lines of large boulders to eliminate vehicular traffic to sensitive resource areas. There are also nesting bald eagles near some recreational facilities within the project area (see section 3.3.4, *Threatened and Endangered Species*). An ORV management plan would help identify locations where ORV use conflicts with the protection of sensitive cultural resources and environmental resources. An ORV management plan would also help minimize adverse effects of ORV use on existing sensitive resources by providing a mechanism to prevent access to sensitive areas and measures to mitigate adverse effects from previous ORV use. We therefore make a recommendation that an ORV management plan be developed as a component of the road and facilities management plan discussed below.

We agree that PG&E should develop a road and facilities management plan within 1 year of license issuance in consultation with the FS, FWS, the Tribe, CDFG, the Hat Creek TAC, SWRCB, and the PRCT. A plan could provide for public use levels and safety, protect facilities from failure, and reduce resource degradation from improperly maintained project-related road segments. We have reviewed the proposed elements of this plan that are specified in the FS final 4(e) condition, and concur that they represent sound road management practices. However, we do not necessarily agree that PG&E should be responsible for management (including rehabilitation and maintenance) of all project area road segments identified in table 46. PG&E should only be responsible for those roads that have a relationship to project purposes. Our review of the roads listed in table 46, which includes those roads listed in table 1 of the FS final 4(e) condition No. 27, reveals no apparent connection to current project purposes for the following road segments: the bald eagle management area road; Big Pine Deer Camp Road; Deep Creek Campground Road; and Gravel Bar Road. In addition, the FS indicates that Pit 4 reservoir spurs may provide access to a possible disposal pile site. Such potential future project use of a road does not provide enough of a basis for us to conclude that PG&E should be responsible for the maintenance of these spurs. If a disposal site is identified, and it is sufficiently linked

to project purposes to require PG&E to assume maintenance of the road, we may require PG&E to modify the project boundary to include the disposal site and the access road to it. If a road and facilities management plan should be included in a new license for this project, we would expect the road inventory that would be included in such a plan to include a description of the function of the road and whether there is a nexus to project purposes. Without a clear showing of such purposes, we do not recommend that PG&E be required to be responsible for the upkeep of such roads.

We do not necessarily agree with the FS 10(a) recommendation to pave 1.5 miles of Hagan Flat Road to control dust from vehicles that use this road (which is not on National Forest System Land). If dust control is the sole reason for paving this road, there may be less costly and equally effective means to achieve this goal. We conclude that it would be prudent to explore alternative dust control measures at this and other project-related roads prior to making a decision to pave the roads.

Public Safety and Law Enforcement

The FS recommended, as a preliminary Section 4(e) condition, that within 1 year of license issuance, PG&E develop in consultation with CDPR, Shasta County Sheriff, and other interested parties, a law enforcement monitoring and patrol plan approved by the FS. The plan would specify frequency and type of monitoring needed to gather information about resource degradation due to recreational uses, provide information to visitors, monitor types of uses, and document and perform site and facility maintenance where necessary. The FS also recommended holding an annual coordination meeting with the agencies to review information from the prior season and to review any necessary plan adjustments.

The FS final 4(e) condition No. 25 substantial alters its original recommendation. The final condition calls for PG&E to develop a plan for providing a full time patrol of the project, including National Forest System Lands within the project area or affected by project facilities, for purposes of resource protection. The plan would be reviewed by the FS prior to being filed with the Commission. The plan would provide for routine and regular physical inspections of affected lands, project facilities, and structures including implemented protection, mitigation, and enhancement measures and the provisions of the HPMP. The plan would also include a description of reporting responsibilities, including observed violations of laws, and communications with law enforcement agencies as well as required documentation of inspections. The FS indicates in its November 14, 2003, letter transmitting its final 4(e) conditions that this plan was agreed to by PG&E. However, until we receive documentation from PG&E that they concur with this 4(e) condition, we cannot assume that they now include this measure as part of their proposed project.

Interior recommended, that within 1 year of license issuance, PG&E develop in consultation with the Tribe, California State Historic Preservation Officer (SHPO), NPS, and the FS, and file with the Commission, a vandalism awareness and law enforcement program. The plan would provide for the development of a vandalism awareness and law enforcement program to educate short-term visitors and local residents about the legal and ethical implications of activities that disturb culturally sensitive sites. The program would include methods such as distribution of flyers, placement of signs, erection of fences, and development of interpretive centers, that would help deter vandalism activities.

The Tribe, in their June 18, 2003 letter in response to the draft EIS, disagreed with our findings and expressed the need for a separate law enforcement plan. The Tribe maintains that the lack of responsiveness by Sheriff representatives, the relatively low cost of entering into an agreement with the local Sheriff's office in light of PG&E's profit, and the cost to protect vital cultural resources does not seem excessive to ensure protection of cultural resources.

Interior also recommended, that within 1 year of license issuance, PG&E increase management presence and provide funding for a level 2 forest protection officer (non-law enforcement) or law enforcement officer depending on resource conditions and management triggers that would be developed in consultation with the PRCT and interested stakeholders. The initial phase would include visitor contacts for education and interpretation; signs with regulations and phone numbers for reporting resource damage, law enforcement issues, and maintenance needs; area camping hosts around Lake Britton to assist with resource protection; and expansion of boat patrols to include Lake Britton shoreline. Interior recommended that the second phase of the plan include funding for law enforcement officer(s) and increased management presence. Interior also recommended that PG&E work with Shasta County and the FS to encourage boat patrols at least 3 days per week, including weekend days.

CDPR recommended that PG&E increase public safety presence on Lake Britton by contracting with the Shasta County Sheriff for at least 6 months of patrol on an annual basis. CDPR recommended that a deputy sheriff conduct boat patrol to improve public safety on Lake Britton and other Pit River locations 40 hours per week during the recreation-use season.

In its November 25, 2002, letter responding to the comments and recommendations made by various parties in response to the Commission's REA notice, PG&E stated that they do not have law enforcement authority and cannot compel agencies to provide additional law enforcement in the project area. However, PG&E supports the idea of providing regular monitoring of certain recreation areas at specific times of the year by

increasing the presence of uniformed maintenance personnel who would be able to contact law enforcement.

Our Analysis

In the draft HPMP, dated October 11, 2002, PG&E stated that intentional vandalism of cultural resource sites within the project area has been minimal (7 out of 157 sites). PG&E proposed in the draft HPMP to conduct formal monitoring visits by the Cultural Resources Specialist once per month throughout the recreation season (April through October) for the first 2 years following the implementation of site-specific treatment measures identified in the HPMP. PG&E proposed that monitoring frequency in the future may decrease if fewer incidents of vandalism or other problems occur. We agree that regular monitoring of the project area would act as a deterrent to help minimize vandalism, cultural resource disturbance, potential squatters, and trash dumping. Signage and interpretive programs throughout the project area would also serve to educate the public on the importance of following area laws and regulations to protect sensitive cultural and environmental resources, so that future generations can enjoy them. Awareness programs and monitoring would also provide a mechanism for management to stay informed of any resource problems so that appropriate actions could be taken. Monitoring for protection of sensitive cultural sites, would be addressed in PG&E's final HPMP (see section 3.3.7, *Cultural Resources*), and vandalism awareness, including an educational component could be a component of a recreation management plan.

Measures for public safety related to recreational use could also be addressed in a recreation management plan. The recreation management plan could include measures to address boating safety and resource degradation due to recreational uses, educate and distribute information to visitors related to effects of recreational use and vandalism on project area resources, monitor types of uses and project recreational facilities, as well as measures to conduct site maintenance and upgrades over the term of the new license. A road and facilities management plan (discussed above) could provide measures to monitor effects of ORV use on project-area resources, and measures to monitor and upgrade roads and parking. However, we agree that the approach offered by the FS in its final 4(e) condition, which would provide for full time patrol of the project, could serve a number of beneficial purposes and the frequent presence of PG&E patrol personnel should serve to deter vandalism and identify if remedial actions may be necessary for continued resource protection. We conclude that development of any such plan should identify which aspects of the various types of monitoring that we outline above would be covered by the full time patrol that would be implemented under the final 4(e) condition.

We do not recommend that PG&E fund camping hosts, boat patrols, or law enforcement personnel beyond those already provided (i.e., concessionaire staff at Jamo

Point). Although increased law enforcement would be beneficial to the project area by providing a mechanism to help ensure that laws and regulations are followed and to help ensure public safety, law enforcement is generally the state and county's responsibility, not the licensee's. Additionally, it is outside of the Commission's jurisdiction to mandate that the licensee fund law enforcement personnel.

Fire Management and Response

The FS recommended, as a preliminary Section 4(e) condition, that PG&E file with the Commission within 1 year of license issuance or 60 days prior to any ground-disturbing activity, a fire management and response plan developed in consultation with the California Department of Forestry and Fire Protection, local fire agencies, and the FS. This plan would identify availability of fire access roads, community escape routes and other pre-fire suppression strategies, identify fire hazard reduction measures, analyze fire prevention needs, and develop fire prevention restrictions based on fire danger, that are consistent with adjacent public land ownership for project-induced recreation on PG&E lands.

The FS final 4(e) condition No. 20, is similar to its preliminary recommendation, except that the plan would be filed with the Commission for approval within 6 months of license issuance and "local fire agency consultation" is replaced by consultation with the Big Bend Volunteer Fire Department. Besides the specific measures listed in the preliminary recommendation, the final condition would call for PG&E to include in the plan the following: (1) how fire danger and public safety associated with project induced recreation, including fire danger associated with dispersed camping, existing and proposed developed recreation sites, trails, and vehicular access would be addressed; (2) an analysis of fire prevention needs including equipment and personnel availability, including fire patrols; (3) a list of the location of available fire prevention equipment and the location and availability of fire prevention personnel; (4) provisions for reporting any project related fires to the FS as soon as practicable; and (5) how fire control and extinguishing would be addressed. The FS also states that the plan should include appropriate measures from the vegetation management plan and address how PG&E would assure that fire prevention measures would meet water quality BMPs.

In its November 25, 2002, letter responding to the comments and recommendations made by various parties in response to the Commission's REA notice, PG&E agreed with the FS condition to develop a fire management and response plan.

Our Analysis

PG&E proposes no specific fire prevention and response measures; however, it has agreed with the state of California to develop two firebreaks on PG&E land: one south of Lake Britton and one near the end of the transmission line south from Pit 4 powerhouse. PG&E has documented a relatively small number of large fires, but a relatively high number of small fires. The large number of small fires indicates the presence of ignition sources, though favorable conditions such as weather and people to extinguish the fires have helped to keep the number of large fires down. However, the continued hydroelectric operations along with the presence of project facilities such as generators, construction equipment, and transmission lines contribute to fire danger in the project area. We expect that, over the term of a new license, the number of recreational users would increase at most developed project sites (although some facilities, such as the Burney Falls State Park, are often at or near capacity now), and dispersed recreational areas with user-created fire rings adds to the threat of fires in the area. Additional fires within the project area would most likely result in property damage, destruction to the scenic beauty of the Pit River Canyon, increased particulate matter and decreased air quality due to smoke, and possibly loss of life.

Having a fire management and response plan in place with fire prevention and response strategies would help minimize damage to natural resources and increase preparedness of fire personnel to provide for public safety when future fires occur. A fire management and response plan would enable compilation of information from the various consulting agencies to facilitate fire prevention needs and procedures throughout the project area. We have reviewed the elements of the FS final 4(e) condition and conclude that they represent prudent preventative measures.

Aesthetic Resources

Reservoir Elevations

PG&E originally did not propose any changes to its current operations of Lake Britton or the Pit 4 and 5 reservoirs (see section 3.3.1, *Water Resources*). PG&E did not specify in its October 11, 2002, letter to the Commission whether its original proposal to increase minimum flows to the Pit 4 and Pit 5 bypassed reaches could alter its current water level management regime at any of the project reservoirs. The PRCT agreement, which now represents PG&E's proposal, specifies operating protocols for all three project developments, including water level management regimes. In general, Lake Britton would be operated between water surface elevations 2,731.5 and 2,737.5 feet (NGVD), the Pit 4 reservoir would be operated between water surface elevations 2,415.5 and 2,422.5 feet (NGVD). The only restriction at the Pit 5 reservoir would be that PG&E would attempt to

maintain a constant water surface elevation of 2,040.5 feet (NGVD) when inflow to the reservoir exceeds the capacity of the Pit 5 powerhouse.

The FS recommended, as a preliminary Section 4(e) condition, that PG&E operate the Lake Britton reservoir year-round so that the maximum instantaneous reservoir surface elevation does not go below 2,730.5 feet NGVD. The FS also recommended that in the summer, the maximum reservoir elevation should not exceed 2,736.5 feet NGVD, so as not to inundate recreational sites on the lake.

Interior did not make specific recommendations, but did recommend that PG&E minimize Lake Britton fluctuation levels during the recreation season, especially during periods of high use. Interior also recommended that PG&E operate to minimize damage to the Burney Falls State Park Beach day-use area.

CDPR recommended addressing the 1-foot elevation change between the current operation and the allowable maximum. CDPR would like to see priority given to maintaining a high pool during high recreational-use days. CDFG recommended that the Lake Britton surface elevations be held to between 2,736.5 and 2,734.5 feet NGVD from March 1 to May 31 to minimize effects on spawning and rearing warmwater fish habitat.

All of the above recommending entities are signatory parties to the PRCT agreement, and we presume that the agreement replaces their original recommendations. The FS final 4(e) conditions are consistent with the PRCT agreement.

Our Analysis

Under the current license, PG&E is allowed to operate Lake Britton from a full reservoir level of 2737.5 feet NGVD to a low of 2,724.5 feet NGVD. Lake Britton is typically drawn down by project generation over the course of the week and then refilled during the weekends by reducing project generation. The FS's original elevation limits are consistent with how PG&E currently voluntarily operates Lake Britton during the recreation season (between 2730.5 and 2736.5 feet NGVD) to facilitate public access to the lake and maintain visual quality. However, during fall and winter, PG&E often draws down Lake Britton to the minimum level of 2,724.5 feet NGVD.

The effects of water levels on the viewshed of Lake Britton have greater human exposure during the recreation season when more visitors are in the area. At a high pool elevation of 2,736.5 feet NGVD, Lake Britton does not have any exposed shoreline areas. At a pool elevation of 2,730.5 feet NGVD, many large sand and gravel bars are exposed in upper Lake Britton, although the wetted width is still greater than the exposed land width.

Most coves in upper Lake Britton are also dewatered under low-water conditions (pool elevation of 2,730.5 feet NGVD).

Fluctuations are more visible where the shoreline is gently sloping because the exposed areas stretch more horizontal than vertical. Views of Lake Britton from the North Shore Campground are substantially different at low pool versus high pool. At low pool, there is a large exposed mudflat, whereas at high pool, there are not any exposed mudflat areas. The difference between low pool and high pool at Jamo Point boat launch is much less apparent because the change is more vertical and it appears that the boat launch would be useable under both conditions. At Burney Falls State Park, low-pool conditions provide a larger beach area, while the water levels at high pool are at the maximum level before flooding of some facilities at the Burney Falls State Park Beach day-use area. The year-round drawdown restriction to elevation 2,731.5 feet (NGVD) specified in the PRCT agreement (1 foot higher than recommended by others) would result in some of the exposed sand and gravel bars being less exposed, thus representing a slight improvement in the visual quality at Lake Britton. We further discuss the influences of Lake Britton water levels in section 3.3.2, *Aquatic Resources*, and section 3.3.3, *Terrestrial Resources*, and section 3.3.5, *Recreational Resources*.

The fluctuation ranges of the Pit 4 and 5 reservoirs are not seasonally related and PG&E originally did not propose any changes to their current operations. Fluctuations in these two reservoirs would expose land more in a vertical direction than horizontally because of the steep terrain surrounding them. However, water-level fluctuations in Pit 4 and 5 reservoirs do not largely affect aesthetics within the project area because Pit 4 and 5 reservoirs do not have developed recreation areas and attract a much lower number of visitors than Lake Britton.

Bypass Reach Flows

Pit 3 Reach—PG&E originally proposed to maintain a year-round minimum release flow of 150 cfs, which on average with seasonal tributary and spring accretion would provide flows in the lower third of the reach that range from about 205 cfs during September and October to greater than 300 cfs during February and April, excluding spill events. This minimum flow release is consistent with current project operations. The PRCT agreement calls for minimum flows ranging from 280 to 350 cfs, depending on the month and spills. Typically minimum flows during the recreation season (May through August) would be 300 cfs (see section 3.3.1, *Water Resources* for more details on existing bypassed reach flows and section 3.3.2, *Aquatic Resources*, and section 3.3.3, *Terrestrial Resources*, for our discussion of the ecological effects of various flow regimes on all project reaches).

For the Pit 3 reach, the FS originally recommended maintaining minimum flows of 400 cfs, Interior recommended 600 cfs from April through October and 800 cfs from November through March, and CDFG recommended varying minimum flows monthly from a low of 600 cfs in August and September to a high of 1,350 cfs in March. CDPR recommended, at a minimum, maintaining the current minimum flow releases to the Pit 3 bypassed reach. All these recommending entities are signatory parties to the PRCT agreement, which we presume replaces their original minimum flow recommendations.

Pit 4 Reach—For the Pit 4 reach, PG&E originally proposed to maintain a year round minimum release flow of 200 cfs, which on average, with seasonal tributary and spring accretion would provide flows in the lower portion of the reach (below Deep Creek) that range from about 260 cfs during September and October to greater than 325 cfs during February and April, excluding spill events. This would be a 50-cfs increase over existing conditions. The PRCT agreement calls for minimum flows ranging from 350 to 450 cfs, depending on the month and spills. Typically minimum flows during the recreation season (May through August) would be from 375 to 450 cfs.

The FS originally recommended maintaining minimum flows of 450 cfs, Interior recommended 600 cfs from April through October and 800 cfs from November through March, and CDFG recommended varying minimum flows monthly from a low of 600 cfs in August and September to a high of 1,350 cfs in March for the Pit 4 reach. All these recommending entities are signatory parties to the PRCT agreement, which we presume replaces their original minimum flow recommendations.

Pit 5 Reach—For Pit 5 Reach, PG&E originally proposed to maintain a year-round minimum release flow of 250 cfs, which on average, with seasonal tributary and spring accretion would provide flows in the lower portion of the reach (below Kosk Creek) that range from 308 cfs during September and October to greater than 800 cfs during February and April, excluding spill events. This would be a 150-cfs increase over existing conditions. The PRCT agreement calls for minimum flows ranging from 350 to 450 cfs, depending on the month and spills. Typically minimum flows during the recreation season (May through August) would be 400 cfs

The FS originally recommended maintaining minimum flows of 500 cfs, Interior recommended 600 cfs from April through October and 800 cfs from November through March, and CDFG recommended varying minimum flows monthly from a low of 600 cfs in August and September to a high of 1,350 cfs in March for the Pit 5 reach. All these recommending entities are signatory parties to the PRCT agreement, which we presume replaces their original minimum flow recommendations.

Whitewater Flows—PG&E did not propose any whitewater boating flows or development of a whitewater boating plan for the project area. The PRCT agreement calls for the development of a recreation streamflow release plan which would entail up to 5 years of baseline data collection, scheduled releases of 1,500 cfs on two consecutive weekend days in August and 1,200 cfs on two consecutive weekend days in September. After 3 years of release, adjustments could be made based on environmental and boater-use monitoring.

The FS recommended that PG&E provide dry-year freshet flows in the Pit 3, Pit 4, and Pit 5 reaches (see section 3.3.2.2, *Aquatic Resources*, and section 3.3.3.2., *Terrestrial Resources*) and states that these flows would provide 10 continuous days of acceptable whitewater boating flows between 1,500 and 1,100 cfs during the first part of March. The PRCT agreement also calls for freshet flow releases that would occur in early March.

The AWA, Shasta Paddlers, and Chico Paddleheads recommended whitewater boating flow releases within the Pit 3, 4, and 5 bypassed reaches. For the Pit 3 reach, these entities recommended maintaining flows during June starting at 900 cfs and tapering to 600 cfs at the month's end, but withdrew this recommendation in response to the draft EIS. For the Pit 4 and 5 reaches, releases ranging from 1,800 cfs in June to 1,250 cfs in September are recommended on alternating weekends with releases into the Pit 4 reach on Saturday and Pit 5 reach on Sunday (see section 3.3.5, *Recreational Resources*, for more detailed whitewater flow analysis). Although AWA is a signatory party to the PRCT agreement, Shasta Paddlers and Chico Paddleheads are not.

Our Analysis

PG&E currently maintains minimum flow releases of 150, 150, and 100 cfs, in the Pit 3, 4, and 5 bypassed reaches, respectively. PG&E proposed minimum flow releases of 150, 200, and 250 cfs in the Pit 3, 4, and 5 bypassed reaches, respectively, whereas the agencies and NGOs originally recommended minimum flows that range from 450 to 1,350 cfs. Within the Pit 3 reach, originally recommended whitewater flows would range from 1,100 cfs to 1,500 cfs during March, whereas in the Pit 4 and 5 reaches recommended whitewater flows would range from 1,800 to 1,250 cfs from June to September. Under the existing minimum flows of 100 to 150 cfs, the Pit River is confined to the channel during the dryer part of the year (June to November) with vegetation encroaching and taking hold in the shallower parts of the channel, based on our review of PG&E's photodocumentation filed with the Commission by letter dated January 21, 2003. Flows of 400, 450, and 500 cfs as the FS originally recommended for the Pit 3, 4, and 5 bypassed reaches, respectively, would enhance aesthetics because these flow would create a wider river margin where more turbulent flows would occur. The minimum flows proposed in the PRCT agreement, which range from 280 to 350 cfs in the Pit 3 bypassed reach (300 cfs during the May through

August primary recreation season), 350 to 450 cfs in the Pit 4 bypassed reach (375 to 450 cfs during the primary recreation season), and 350 cfs to 450 cfs in the Pit 5 bypassed reach (400 cfs during the primary recreation season), are similar to the originally recommended FS flows, although somewhat lower. The closest flows to the PRCT minimum flows that PG&E provided photodocumentation for is 400 cfs for each of the three bypassed reaches. Mean flows of 400 to 500 cfs and slightly higher are documented in the Pit 4 and 5 bypassed reaches during December and May (see table 5), which would be generally representative of the appearance of these two bypassed reaches for much of the year under the PRCT flow regime.

In Appendix 1 of the FS's October 9, 2002, preliminary Section 4(e) conditions, diagrams indicate that at flows of 400 cfs, pools and shallows would be created along the channel edge within the Pit 3 reach. PG&E provided photodocumentation of all flows that were evaluated for all three bypassed reaches during their controlled flow studies conducted during August 2002 (filed with the Commission by letter dated January 21, 2003). Our review of PG&E's photodocumentation for the Pit 3 reach indicates that flows of 400 cfs show a more defined river channel than at 150 cfs for all three bypassed reaches, with some whitewater, but vegetation still encroaches. Eventually, we expect that most of the encroaching vegetation shown in the photographs of flows of 400 cfs would die off and some of the pools that are evident now may be eliminated.

Flows of 1,800 cfs within the Pit 3 bypassed reach which were originally recommended for whitewater boating are typical of a freshet or spring spilling event. Recommended whitewater flows of 1,250 to 1,800 cfs for the Pit 4 and Pit 5 bypassed reaches would be similar to mean flows recorded at gages below Pit 4 dam (1,108 cfs to 1,328 cfs) and at Big Bend (1,341 to 1,640 cfs) during February and March (see table 5). Whitewater flow releases, though similar in magnitude to natural spring flows, were recommended during the summer months (now confined to August and September in the PRCT agreement), which typically have low flows ranging from 164 cfs to 275 cfs between June and September as recorded below Pit 4 dam and from 139 cfs to 286 cfs between June and September in the Pit 5 reach as recorded at Big Bend. Scheduled whitewater flows would enable summer recreationists to view the high-flow events, which, under existing conditions, typically occur only during the late winter. Our review of PG&E's photodocumentation of all three bypassed reaches at flows of 1,250 cfs and 1,800 cfs reveals a very different river than under current and proposed minimum flows. Nearly all of the channel is inundated under such flows, including the riparian vegetation. The water appears turbulent across most of the channel, with much more whitewater than is evident at flows of 400 cfs or less. Such flows would provide short-term views that illustrate the natural power of the river, which contrast sharply with the more idyllic flow regimes that typically occur in all three bypassed reaches during the summer. However, as discussed in sections 3.3.2, *Aquatic Resources*, 3.3.4, *Threatened and Endangered Species*, and 3.3.5,

Recreation Resources, respectively, whitewater flow releases could adversely affect algae and invertebrates, thus limiting the forage base available to fish, foothill yellow-legged frog tadpoles, and western pond turtles. High flows could attract large numbers of boaters in June, July, and August, which could impair reproductive success and adversely affect bald eagles in the project area. Similarly, high flows during the summer, when flows are typically low, could adversely affect the trout fishery and the associated angling recreational opportunities. Likewise, higher flows occur naturally during early spring and can be viewed during those times.

Proposed Recreational Enhancements

Some proposed recreational enhancements (see section 3.3.5, *Recreational Resources*) may affect the aesthetics of the project area. During construction of new facilities, earth-disturbing activities and equipment operations could have short-term adverse effects on the scenic value of the area. Vegetation removal also would be likely to accommodate new facilities and may result in temporary or long-term change in the visual character of the immediate area surrounding the facilities. However, these potential adverse effects would be offset by long-term visual enhancements that some proposed enhancements in the project area would provide, such as increased recreational access and viewing locations within the Pit River Canyon. Formalizing popular dispersed recreation areas could provide management to help reduce sanitation concerns such as user-created latrines and littering. Development of recreational enhancements would be in consultation with the FS and consistent with the VMP described below to help ensure that new facilities area consistent with the appropriate VQO for the area.

Visual Resource Management

Some project features (such as the Pit 3 intake structure, 12-kV project distribution line, and telephone line; the Pit 3 and 4 powerhouses, penstocks, and switchyards; and the Pit 4 and 5 dams) compete for visual dominance with the natural features. To help offset visual contrast of project features and further protect visual resources, PG&E proposes in the license application to develop a visual resource management plan in consultation with the FS and CDPR.

The FS recommended, as a preliminary Section 4(e) condition, that PG&E develop a VMP approved by the FS to be filed with the Commission within 1 year of license issuance or 60 days prior to any ground-disturbing activity. At a minimum, this plan would address clearings, spoil piles, and project facilities such as diversion structures, penstocks, pipes, ditches, powerhouses, other buildings, transmission lines, corridors, and access roads. The VMP would address facility configurations, alignments, building materials, colors, landscaping, and screening. The VMP would also provide a proposed mitigation and

implementation schedule to help ensure that the existing project facilities comply with the VQOs of the Lassen and Shasta-Trinity LRMPs. Possible measures would include the following:

- using surface treatments with colors and materials that are in harmony with the surrounding landscape;
- using native plant species to screen facilities from view, where appropriate;
- reshaping and revegetating disturbed areas to blend with surrounding scenic characteristics;
- developing scenic overlooks along scenic routes;
- removing project-induced debris piles that detract from the visual quality; and
- conducting general maintenance and upkeeping facilities.

In its May 19, 2003, letter commenting on the draft EIS, the FS comments that there have been a number of items such as buoy lines, signs, and other debris that have broken away from project facilities and should be removed. The FS suggested that the VMP include measures to address debris removal. The FS also clarifies that the LRMP VQO designations were not intended to identify small-scale features, such as PG&E facilities. Nonetheless, the FS suggests changing the VQOs for areas within sight distance of PG&E facilities from “retention” and “partial retention” to the more appropriate designation of “modification.”

The FS final 4(e) condition No. 20 is very similar to its preliminary recommendation. The only differences are that it clearly states that the VMP should be filed with the Commission within 1 year of license issuance (thus eliminating the ambiguity of the “or 60 days prior to any ground-disturbing activity” provision in its preliminary recommendation) and the FS states that the VMP would provide a mitigation and enhancement schedule to help ensure that the project facilities comply with applicable LRMP direction (thus providing flexibility to accommodate the FS recommended changes to the VQOs).

In its November 25, 2002, letter responding to the comments and recommendations made by various parties in response to the Commission’s REA notice, PG&E affirmed its commitment to work with the FS to develop a visual resource management plan.

Our Analysis

The project facilities and operations are clearly visible with the PG&E buildings contrasting sharply with the forested landscape. Currently, some project features do not meet the VQOs established in the Lassen and Shasta-Trinity LRMPs; however, the project features existed before the FS developed its management policies. The Pit 4 dam is one

visually dominant feature that contrasts with the surrounding landscape and does not meet with the current “partial retention” VQO of the area. The Pit 3 and 4 powerhouses and associated penstocks and switchyards are also highly dominant features that do not meet the current VQOs of “partial retention” and “retention,” respectively. Other project features that are visually dominant include the 12-kV project transmission line and telephone line that are highly visible, especially where several poles and wires come together overhead of the PCT, the Pit 5 dam, and the 230-kV transmission line from Pit 4 powerhouse. Although these features are outside FS lands and thus not subject to FS management VQOs, there may be measures that can be implemented to reduce their contrast with the surrounding landscape.

Although it may not be practical to devise methods to blend the dams in with the natural environment, there may be ways to reduce the contrast of other structures through paint colors or vegetative screening. Because the FS policies evolved with the project features in place, we do not recommend that existing facilities be modified to meet current FS VQOs. We agree with the FS that revising the VQOs within sight distance of PG&E facilities to “modification” would make the project more consistent with the FS LRMPs. We also agree that consideration of visual screening, such as painting or vegetative screening during regular maintenance or upgrading of existing facilities is appropriate for the Pit 3, 4, 5 Project. A coordinated approach to address visual effects of the existing facilities and proposed new facilities would help to protect aesthetic resources within the project area and help ensure that project facilities would be consistent with the applicable LRMP direction. We also concur with the FS that PG&E should be responsible for removal of project-related debris to the extent that such removal is practical. However, some of the project reaches are not readily accessible for debris removal efforts, and this should be taken into account in any VMP that may be developed.

We present the estimated cost of all measures that pertain to land use and aesthetic resource in chapter 4.0, *Developmental Analysis*, and make our final recommendations regarding these measures in section 5.2, *Comprehensive Development and Recommended Alternative*.

Project Decommissioning

In the event of project decommissioning, the land use within the project area would change because hydroelectric operations would no longer exist. The dams, or portions thereof, would be removed, but the project structures would remain as part of the existing landscape. Project intakes and the tunnels would be scaled off such that all flows would be directed through the bypassed reaches. The project reservoirs would convert to riverine conditions. Ownership of those lands currently owned by PG&E would likely change, because PG&E would no longer require the project lands for project operations.

Dependent on the subsequent landowner, public access to some parts of the project area and recreational opportunities may be eliminated. If a bridge is removed as part of decommissioning, it is clear that it would influence roads that rely on the bridges; this could have a substantial bearing on land use in the area given the limited number of roads.

Lake Britton Area—With removal of the Pit 3 dam, the area surrounding Lake Britton would be converted from a lacustrine to a more riverine environment. The removal of the dam would cause water levels to drop and expose large mud-flat areas, causing substantial adverse visual effects until these areas could revegetate. However, based on our experience at other facilities where dams have been removed, revegetation of exposed mud flats typically begins during the first growing season after dam removal. Project decommissioning would likely dewater the developed recreation sites along the shorelines of Lake Britton, especially those closer to the dam that would experience a larger drop in water level. Lower water levels would affect the land use by changing recreational uses in the Lake Britton area from flat water based to more river based (see section 3.3.5, *Recreational Resources*).

Removal of the Pit 3 dam would require rerouting travelers that use the Clark Creek Road Bridge, which currently crosses the Pit River over the top of the Pit 3 dam. Vehicles could use the Highway 89 Bridge to cross the river and all points would still be accessible via Clark Creek Road on either side of the river. Removal of Pit 3 dam would also require the rerouting of the PCT, which uses the Clark Creek Road Bridge to cross the Pit River. The PCT could be rerouted over the Highway 89 Bridge or a pedestrian bridge could be constructed for the trail.

Pit River Canyon—Decommissioning would include removal of the entire Pit 3 dam resulting in a more natural environment in the vicinity of the dam, thus restoring the reach to a more natural river environment and eliminating the contrasting visual elements. Project decommissioning with dam removal would have a lesser aesthetic effect on the Pit 4 and 5 reservoirs, than Lake Britton because they are smaller, have steeper embankments and there are no formal recreational developments along their shorelines. However, decommissioning would still result in lower water levels and exposed shorelines in these reservoirs. Downstream of the Pit 3 dam, decommissioning would increase flows in the bypassed reaches because water would no longer be diverted to the powerhouses.

Decommissioning of the Pit 4 dam could include removal of at least the center spillway section of the dam to its base. The buttress dam section could remain; however, the remaining section would require regular maintenance to ensure its structural integrity and the remaining dam section would continue to provide a minor effect on the surrounding natural setting. In terms of aesthetics, removal of the entire structure would result in a more natural setting in the vicinity of the dam.

Decommissioning of the Pit 5 dam could include removal of the gates and gate lifting superstructure, but would allow the piers and bridge to remain. With removal of these structures, the structural integrity of the bridge across the river might need to be evaluated, and some re-enforcement of the bridge could be necessary. Following decommissioning, PG&E would no longer be responsible for maintaining the bridge, thus the party responsible for conducting this evaluation and implementing any structural modifications would need to be identified. Similarly, if no party takes over the maintenance responsibility of the bridge, decommissioning could result in removal of the entire Pit 5 dam. Removal of the entire Pit 5 dam would require rerouting or terminating River Road, which currently crosses the Pit River over the dam. Removal of the Pit 5 dam and River Road Bridge would substantially affect access, because there are no other secondary access routes that would provide access to the upper reaches of the Pit River Canyon. In terms of aesthetics, removal of the entire structure would result in a more natural setting in the vicinity of the dam. CalTrans or Shasta County would likely need to build a new bridge across the Pit River to restore the access lost by the removal of Pit 5 dam. Also, following decommissioning of the project, PG&E would no longer be expected to maintain project roads, which would be needed in order to provide public access and fire routes. This burden would likely fall to the Shasta County and CalTrans.

3.3.6.3 Unavoidable adverse effects: None.

3.3.7 Cultural Resources

3.3.7.1 Affected environment:

Area of Potential Effect and Consultations

In response to a January 31, 2000, letter to the Commission from PG&E, the Commission authorized PG&E to represent the Commission in consultations with the California SHPO, the Tribe, and other parties regarding the preparation of information necessary to comply with Section 106 of the National Historic Preservation Act, including the definition of the APE, pursuant to 36 CFR Part 800.2(a)(3). PG&E's application for a new license (appendix E4-C) documented consultations with the Tribe, the FS, and the Cultural Resources Subcommittee of the Pit River Collaborative Team, regarding cultural resources issues, including discussions about the definition of the APE. Prior to the filing of PG&E's final application for a new license for this project, Commission staff met with the Pit River Tribal Council, and attended meetings of the Cultural Resources Subcommittee, to discuss cultural resources issues, including the definition of the APE. PG&E defined the APE in the HPMP which was included in its application (report E4). Maps of the APE were attached to its application as appendix E-4-D. The HPMP describes the APE as follows:

- all lands within the FERC project boundaries, including all project facilities, and project access road corridors extending 25 feet on either side of the road centerline plus turnouts;
- most flat terraces and margins of the three Pit River reaches with a slope of 40 percent or less, including the immediate areas surrounding the confluence of all creeks with the Pit River. The only major exception is the privately owned land in the vicinity of the community of Big Bend (Reach 5). Between PG&E Camp Pit downstream to the confluence of the Pit River and Kosk Creek the APE is restricted to 25 meters on either side of the Pit River from the high water line;
- within the three Pit River reaches, any trails and routes used for recreational purposes that extend from project access roads to the Pit River; and
- that portion of FS Road 37N01 (Red Cinder Road) from Highway 299 to a boat launch and parking area at the upstream end of Lake Britton, extending 25 meters on either side of the Red Cinder Road centerline, plus turnouts.

In a letter dated May 2, 2001, the SHPO indicated that it found PG&E's definition of the APE for this project satisfactory. We also agree with this definition of the APE.

Archaeological and Historical Investigations

PG&E's application (table E4-3) listed 28 archaeological and historical investigations that have been conducted on various portions of the APE since 1952. One of the major archaeological inventories of the project area was the 1969 survey directed by Jerald Johnson of California State University at Sacramento, which examined 112 sites, of which 32 were previously recorded and 80 were newly identified (Johnson and Johnson, 1969). In 1983, Peak and Associates conducted a survey for PG&E in response to the 1981 relicensing of the project, resulting in documentation for 97 sites, including 40 which were newly recorded. Peak and Associates also tested some sites which were demonstrated to be subject to project-induced erosion (Peak and Associates, 1984). A history of the Pit 3, 4, 5 project area was written by Kenneth Owens of California State University at Sacramento in 1984 under a subcontract to Peak and Associates.

In 1973, the FS prepared a NRHP nomination form for the Lake Britton District, based on the Johnsons' 1969 survey. The nomination was processed by the NPS, and the District was officially listed on the NRHP in 1975. The District's boundaries cover an area greater than the APE for this project. The District boundaries extend from just east of the junction of Hat Creek with the Pit River to just below Lake Britton, encompassing 23

miles of shoreline and 1,265 acres. At least 90 archaeological sites, including 20 prehistoric villages, are known to be within the District.

Based on Peak and Associates' 1983 survey, Infotec Research Inc. (Infotec) produced an HPMP for the project in 1987 (Goldberg, 1987). That HPMP, produced to satisfy a condition of the 1981 license, addressed 80 prehistoric sites and 17 historic sites within the APE.

In 1985, PG&E sponsored an archaeological testing program by Wirth Environmental Associates (Wirth) at 27 sites along Lake Britton (Kelly et al., 1987). Data recovery excavations were conducted by Dames & Moore in 1992 at 8 sites threatened by erosional and recreational impacts (Cleland, 1997).

More recently, in preparation for this relicense application, PG&E sponsored additional archaeological and historical investigation. In 1999, KEA Environmental, Inc. (KEA) surveyed about 2,000 acres along the Pit River below Lake Britton, covering the Pit 3, 4, and 5 reaches and associated recreational trails, relocating 28 previously documented sites and recording 62 new sites. In 2000, KEA surveyed the Red Cinder Road, identifying 8 previously recorded sites and finding 2 new sites (Heipel and Underwood, 2000; Gross, 2000b). Also in 2000, PG&E had URS Corporation conduct site inspections, record updates, and impact assessments at 60 archaeological sites within the APE (Nilsson and Kelly, 2000).

On PG&E's behalf, KEA conducted additional investigations at 31 historic archaeological sites identified during the 1999 survey (Gross, 2000a). KEA recommended that an historic district should be nominated to the NRHP consisting of elements related to PG&E's historic hydroelectric facilities. In 2000, PAR Environmental Services, Inc. (PAR) made NRHP evaluations of the historic standing structures and features associated with the Pit 3,4, and 5 hydroelectric project (Baker and Maniery, 2001). PAR also prepared Historic American Engineering Record documentation for the NRHP-eligible Pit 4 diversion dam, to mitigate dam rehabilitation work done by PG&E (Baker, 2002).

The cumulative result of the numerous investigations is that the entire APE appears to have been inventoried for prehistoric and historic archaeological sites and historic standing structures and features. A total of 242 sites have been identified by the previous investigations. However, as discussed below, not all of those sites are within the APE, or are still extant as originally recorded.

On October 11, 2002, as part of its current final license application, PG&E filed a new draft HPMP. This new draft HPMP updated the original draft submitted in October 2001 with PG&E's draft application, and is intended to replace the 1987 HPMP produced

by Infotec for the 1981 license. The new draft HPMP discussed 157 archaeological sites identified in the APE. This includes 81 sites which are strictly prehistoric, 37 historic archaeological sites, and 39 sites which contain both prehistoric and historic components. The new draft HPMP's count differs from our total of 242 sites combining all previous investigations because some sites were recorded outside the APE, some sites were combined, some sites are under the waters of Lake Britton, some sites have disappeared from the landscape and were not relocated by later surveys, and the historic standing structures and features addressed by PAR were not counted by PG&E. Based on the 1985 Wirth testing program, Infotec's 1987 HPMP, and URS's 2000 site assessments, PG&E's new draft HPMP indicated that 8 archaeological sites (CA-SHA-356, 379, 382, 383, 399, 420, 433/H, and 1401) are recommended to be not eligible for the NRHP. Other archaeological sites tested (CA-SHA-350, 375, 381/H, 385/H, 386/H, 395, 396/H, 397, 400, 407, 419, 431, 536, 1417, 1418, 1464/H, 1471, 1474/H, and 1475/H) were evaluated as eligible for the NRHP. The remaining 130 sites have not yet been evaluated.

The SHPO, in a letter dated May 2, 2002, commented on the eligibility recommendations made by KEA and PAR for the historic period sites. The SHPO stated that the following elements of the Pit 3, 4, and 5 hydroelectric system are individually eligible for the NRHP: Pit 3 dam and Lake Britton, Pit 3 powerhouse, Camp Shasta, Camp Britton, Pit 4 dam, Pit 5 diversion dam, Pit 5 open conduit dam, and Pit 5 powerhouse. The following structures are contributing elements to the proposed historic district: Pit 3 intake structure, Pit 3 tunnel, Pit 3 conduit over Rock Creek, Pit 3 surge tank, Pit 3 penstocks and valve house, Pit 4 intake structure, Pit 4 tunnel, Pit 4 powerhouse, Camp Pit, Pit 5 intake structure, Pit 5 tunnel, Pit 5 surge chamber, Pit 5 penstock and valve house, Pit 5 garage, and Pit 5 post office. Four historic archaeological sites (CA-SHA-2127-H, 2972-H, 2974-H, and 2975-H) are related to the Pit 3, 4, 5 hydroelectric system, and are contributing elements to the proposed historic district. The SHPO indicated that 18 historic archaeological sites (CA-SHA-942-H, 1422-H, 1607-H, 2689-H, 2955-H, 2957-H, 2958-H, 2960-H, 2966-H, 2969-H, 2971-H, 2973-H, 2981-H, 3009-H, 3014-H, 3015-H, 3016-H, and 45-003024-H) related to the hydroelectric system are not contributing elements and do not qualify for the NRHP. Nine historic archaeological sites (CA-SHA-2687-H, 2688-H, 2956-H, 2976-H, 2992-H, 3001-H, 3020-H, 3022-H, and Pit 5-48H) not related to the hydroelectric system were also found not eligible. We agree with the SHPO.

The California SHPO has not commented on the NRHP eligibility of the other archaeological sites within the APE. PG&E has taken the position that it would treat all of the unevaluated sites as if they are potentially eligible for the NRHP. The new draft HPMP is crafted so that all prehistoric/aboriginal sites are protected and managed as if they are eligible. In addition, these sites would be within a revised NRHP archaeological District.

On April 7, 2003, PG&E filed with the Commission its first draft revised NRHP nomination form for the archaeological District. The revised nomination, in response to a April 9, 2002 information request from the Commission, is intended to update the 1975 District, expanding its boundaries to include all cultural resources identified in the APE since 1975. A copy of the first draft revised nomination form was submitted to the Tribe and the FS on March 21, 2003. This first draft would be further revised by PG&E based on comments it receives from interested parties, and the results of additional investigations, including the new ethnographic study discussed below.

Traditional Cultural Properties

In association with its previous relicensing effort, PG&E in 1984 commissioned ethnographic studies of the Native American peoples who have historical and cultural ties with the Pit River region (Woods and Raven, 1985). Native American inhabitants of the Pit River region, collectively known in the ethnographic literature as the Achumawi, are today referred to as the federally-recognized Pit River Tribe. Three of the 11 Achumawi bands - the Ilmawi, Itsatawi, and Madesi - traditionally inhabited the APE. The ethnographic consultants performed archival research and conducted oral interviews with tribal members to document ethnographic village locations, historic period Indian allotments, cemeteries, and a variety of sacred sites. In total, 122 traditional cultural properties were identified. Of these, 50 locations have been correlated with recorded archaeological sites, while 36 traditional cultural properties are outside the APE.

As part of the current relicensing effort, PG&E consulted with the Tribe to obtain additional information about properties of traditional cultural or religious significance to the Tribe within the APE. The Tribe and PG&E entered into a Memorandum of Understanding, signed by the Tribe on June 6, 2003, calling for PG&E to hire an ethnographic consultant (California State University at Sacramento) to conduct interviews with knowledgeable tribal members and collect information about additional traditional cultural properties and traditional plant use and gathering locations. This new ethnographic study should update and supplement the study done in 1984.

3.3.7.2 Environmental effects: Effects on cultural resources within the APE can result from use and maintenance of roads (including associated drainage ditches), wind and water erosion, recreation, vandalism, and modifications or repairs to project facilities. The type and level of effects on cultural resources can vary widely, depending upon the setting, size, and visibility of the resource, as well as whether or not there is public knowledge about the location of such a resource. Effects may be attributable to project operation, or to project-related recreational or other enhancement; they may also be attributable to natural and human forces unrelated to the existence or operation of the project.

Applicant-Proposed Measures

PG&E's new draft HPMP outlined the measures it proposes to utilize to avoid, reduce, or mitigate impacts on NRHP eligible or potentially eligible cultural resources within the APE. Table 50 lists all NRHP-eligible or potentially eligible sites in the APE, effects, and proposed treatment measures. This table is based on the new draft HPMP filed October 11, 2002, and does not include changes in evaluations and management strategies negotiated between PG&E and the Cultural Resources Subcommittee since that date. It is expected that all changes in site evaluations and treatment recommendations would be addressed in the final HPMP for the new license.

Table 50. Potential effects on eligible or unevaluated archaeological resources and proposed initial treatment. (Source: PG&E, 2001)

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-0138/H	Lake Britton	Historic use, trail	No, historic use and trail not project related	None
CA-SHA-0156	Reach 5	Historic use, erosion	No, natural erosion; past use not project related	None
CA-SHA-0246	Reach 5	Erosion	No, natural erosion	None
CA-SHA-0333/H	Reach 5	Historic use, erosion	No, natural erosion; use not project related	None
CA-SHA-0339/H	Reach 5	Historic use	Yes, project maintenance activities	Gate access road
CA-SHA-0340/H	Reach 3	Historic use, roads, demolition	Yes, project maintenance activities	Boulder, education, signage
CA-SHA-0342/H	Reach 5	Historic use, erosion	No, natural erosion; access not project related	None
CA-SHA-0343	Reach 3	Historic use, road	Yes, project and road construction and maintenance	None
CA-SHA-0344	Lake Britton	Trail, historic use	No, historic use and trail not project related	None

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-0347	Reach 3	Erosion	No, natural erosion	None
CA-SHA-0350	Lake Britton	Trail, light erosion	Yes, erosion project related, but stabilized; trail not project related	None
CA-SHA-0358/H	Lake Britton	Trail, moderate erosion	Yes, trail project related; erosion not project related	Signage
CA-SHA-0359	Lake Britton	Road, trail, moderate erosion	Yes, road, trail, erosion project related	Boulder access
CA-SHA-0361	Lake Britton	Road, trail	Yes, project road provides vehicular and foot access	Signage
CA-SHA-0369	Lake Britton	None	NA	None
CA-SHA-0375	Lake Britton	Recreational use, minor erosion	Yes, erosion project related, but all effects mitigated through data recovery	None
CA-SHA-0381/H	Lake Britton	Recreational use, some erosion	Yes, erosion project related, but all effects mitigated through data recovery	Previously mitigated
CA-SHA-0385/H	Lake Britton	Recreational use, erosion	Yes, erosion and recreation use project related; erosion stabilized	Signage
CA-SHA-0386/H	Lake Britton	Minor erosion	Yes, erosion project related, but stabilized; new slumping of stabilization	Repair existing stabilization
CA-SHA-0389/H	Lake Britton	Light trail	No, trail not project related	None

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-0395	Lake Britton	Minor erosion	Yes, erosion project related, but mitigated through data recovery	None
CA-SHA-0396/H	Lake Britton	Light trail	Yes, trail project related	Signage
CA-SHA-0397	Lake Britton	Minor erosion	Yes, erosion project related	Stabilize erosion
CA-SHA-0400	Lake Britton	Vehicles	Yes, access project related	Done
CA-SHA-0401/H	Lake Britton	Logging	No, logging not project related	None
CA-SHA-0407	Lake Britton	Past road	No, FS road	None
CA-SHA-0413/H	Lake Britton	Erosion, trail	Yes, project road provides access; natural erosion	Signage
CA-SHA-0419	Lake Britton	Erosion	Yes, erosion project related	Repair existing
CA-SHA-0431	Lake Britton	Recreation	Yes, recreation project related	Signage
CA-SHA-0432	Lake Britton	Logging	No, logging not project related	None
CA-SHA-0434	Lake Britton	None	NA	None
CA-SHA-0435	Lake Britton	None	NA	None
CA-SHA-0436	Lake Britton	Recreation, erosion	Yes, erosion project related; other effects mitigated	None
CA-SHA-0655/H	Reach 5	Historic use, demolition	No, use and demolition not project related	None

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-1159	Lake Britton	Vehicles, recreation, logging	Yes, project road provides access	Signage
CA-SHA-1392/H	Lake Britton	Trail, recreation, logging	Yes, trail project related; road/logging not project related	Signage
CA-SHA-1394/H	Lake Britton	Grazing, logging, recreation	Yes, project road provides access; logging/grazing	Signage
CA-SHA-1395/H	Lake Britton	Road	Yes, project road provides access	Boulder, signage
CA-SHA-1396/H	Lake Britton	Erosion, recreation logging	Yes, project road provides access; logging not project related	None, site not National Register-eligible
CA-SHA-1404	Lake Britton	Recreation, road	Yes, project road provides access	To be developed
CA-SHA-1406	Lake Britton	Logging	No, logging not project related	None
CA-SHA-1409	Lake Britton	Erosion	Yes, erosion project related	None, site no longer present
CA-SHA-1410/H	Lake Britton	Vehicles (off-road vehicle), trail	No, access not project related	None
CA-SHA-1415	Lake Britton	Road	Yes, nearby project road provides off-road vehicle access	signage
CA-SHA-1416/H	Lake Britton	Road, logging	Yes, project road provides access; logging not project related	Boulder, signage
CA-SHA-1417	Lake Britton	Erosion, trail, recreation	Yes, erosion is project related; effect mitigated	Previously mitigated

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-1418	Lake Britton	Trail, recreation, vehicles	Yes, project recreation facility provides access	Signage
CA-SHA-1421	Reach 5	Historic use, trail	Possible, project road provides access	Boulder, signage
CA-SHA-1423/H	Reach 3	Historic use, erosion	Yes, project road provides access; natural erosion	Signage
CA-SHA-1424/H	Reach 3	Historic use, maintenance, grading	Yes, Camp Shasta maintenance	Boulder, education
CA-SHA-1463/H	Lake Britton	Trail, vandalism, road, recreation	Yes, project-related parking area provides access	Boulder, signage
CA-SHA-1464/H	Lake Britton	Trail, recreation	Yes, access project related	Signage
CA-SHA-1465/H	Lake Britton	Erosion, trail	Yes, erosion and trail project related	Stabilize erosion, signage
CA-SHA-1466/H	Lake Britton	Erosion, trail	Yes, trail project related; natural erosion	Signage
CA-SHA-1467/H	Lake Britton	Trail	Yes, access project related	Signage
CA-SHA-1469	Lake Britton	Trail, recreation, logging, minor erosion	Yes, erosion and recreation project related; logging not project related	Stabilize erosion, signage
CA-SHA-1470/H	Lake Britton	Trail, historic use (ditch)	Yes, access project related	Signage
CA-SHA-1471	Lake Britton	Trail, erosion	Yes, erosion and trail project related	Stabilize erosion, signage

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-1472/H	Lake Britton	Trail	Yes, access project related	Signage
CA-SHA-1474/H	Lake Britton	Trail, recreation	Yes, trail and recreation project related	Signage
CA-SHA-1475/H	Lake Britton	Trail, erosion	Yes, trail project related; erosion not active	Signage
CA-SHA-1476/H	Lake Britton	Vehicle traffic, trail	Yes, trail project related, vehicle access not project related	Signage
CA-SHA-2121	Reach 5	Logging, natural deterioration	No, logging and deterioration not project related	None
CA-SHA-2122	Reach 5	Logging, natural deterioration	No, logging and deterioration not project related	None
CA-SHA-2127/H	Reach 4	Demolition, erosion	Yes, project-related maintenance	Boulder, education
CA-SHA-2128	Reach 4	Logging, roads	Yes, project access road; logging not project related	Boulder
CA-SHA-2129	Reach 4	Logging	No, logging not project related	None
CA-SHA-2131	Reach 5	Erosion, trail	No, natural erosion; access not project related	None
CA-SHA-2239	Reach 5	Historical use	No, historical use not project related (gravel extraction)	None
CA-SHA-2944	Reach 3	Natural deterioration	No, deterioration not project related	None
CA-SHA-2945	Reach 3	Logging, erosion	No, logging not project related; natural erosion	None

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-2946	Reach 3	Logging, erosion	No, logging not project related; natural erosion	None
CA-SHA-2947	Reach 3	Trail, erosion	Yes, project road encourages trail; natural erosion	Signage
CA-SHA-2948	Reach 3	Logging, vandalism	No, logging not project related; access not project related	None
CA-SHA-2949	Reach 3	Erosion	No, natural erosion	None
CA-SHA-2950	Reach 3	Trail, erosion	Yes, project road encourages trail; natural erosion	Signage
CA-SHA-2951	Reach 3	Natural deterioration	No, deterioration not project related	None
CA-SHA-2952	Reach 3	Trail	Yes, project road encourages trail	Signage
CA-SHA-2953/H	Reach 3	Trail, road	Yes, project road encourages trail, road maintenance	Boulder, signage, education
CA-SHA-2954	Reach 3	Trail, erosion	Yes, project road encourages trail; natural erosion	Signage
CA-SHA-2959	Reach 3	Trail	Yes, project road encourages trail	Signage
CA-SHA-2966/H	Reach 4	None	NA	None
CA-SHA-2967	Reach 4	Natural deterioration	No, deterioration not project related	None
CA-SHA-2968	Reach 4	None	NA	None
CA-SHA-2970	Reach 4	Natural deterioration	No, deterioration not project related	None
CA-SHA-2972	Reach 4	Erosion	No, natural erosion	None

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-2974	Reach 3	Road	Yes, project access road maintenance	Boulder, education
CA-SHA-2975/H	Reach 3	Road	Yes, project access road maintenance	Education
CA-SHA-2977	Reach 4	Old vandalism	Yes?, access could be related to project gaging station	Secure project access
CA-SHA-2978/H	Reach 4	Historic use	No, access not project related	None
CA-SHA-2979	Reach 4	None	NA	None
CA-SHA-2980	Reach 4	Logging	No, logging not project related	None
CA-SHA-2986	Reach 5	Erosion	No, natural erosion	None
CA-SHA-2987	Reach 4	Vandalism, erosion	No, natural erosion; access not project related	None
CA-SHA-2988	Reach 5	Logging	No, logging not project related	None
CA-SHA-2989	Reach 5	Erosion	No, natural erosion	None
CA-SHA-2990	Reach 5	Erosion	No, natural erosion	None
CA-SHA-2991	Reach 5	Logging, erosion	No, natural erosion; logging not project related	None
CA-SHA-2993/H	Reach 5	Natural deterioration	No, deterioration not project related	None
CA-SHA-2994	Reach 5	Erosion	No, natural erosion	None
CA-SHA-2995/H	Reach 5	Historical use, erosion	No, natural erosion; no project related access	None
CA-SHA-2996	Reach 5	Vandalism, logging	No, logging and access not project related	None
CA-SHA-2997	Reach 5	Erosion	No, natural erosion	None

Trinomial	Area	Effects	Project-related?	Treatment
CA-SHA-2998	Reach 5	Erosion	No, natural erosion	None
CA-SHA-2999	Reach 5	Historical use, erosion	No, natural erosion; access not project related	None
CA-SHA-3000/H	Reach 5	Historical use, trail	No, access not project related	None
CA-SHA-3002	Reach 5	Trail, erosion	No, natural erosion; access not project related	None
CA-SHA-3003	Reach 5	Trail	No, access not project related	None
CA-SHA-3004	Reach 5	Trail	No, access not project related	None
CA-SHA-3005	Reach 5	Erosion	No, natural erosion	None
CA-SHA-3006	Reach 5	Erosion, vandalism	No, natural erosion; access not project related	None
CA-SHA-3007	Reach 5	Erosion	No, natural erosion	None
CA-SHA-3008	Reach 5	Erosion	No, natural erosion; access not project related	None
CA-SHA-3021	Reach 5	Erosion	No, natural erosion	None
CA-SHA-3098	Lake Britton	None	NA	None

Note: NA - not applicable.

PG&E proposes a variety of measures to resolve project-related effects on specific archaeological resources within the APE. General treatment measures include redirecting activities away from sensitive cultural resources through road closures, changes to travel routes, use restrictions, and physical barriers; informational deterrents such as signage and employee education; and monitoring. PG&E has developed a 3 stage management strategy. Stage 1 requires the least amount of landscape alternation and includes redirection of activities and deterrence of impact through dissemination of information. If Stage 1 measures are not effective in protecting sites, Stage 2 would be implemented, which is more extensive. Stage 2 would include more physical barriers, more restrictions on

recreational activities, and additional monitoring. If Stage 2 measures are not effective, PG&E would consult with the Commission, SHPO, Tribe, and the FS in developing Stage 3 measures.

PG&E has no current plans to make major changes or modify any of the historic Pit 3, 4 and 5 structures that are eligible for the NRHP. However, over the course of the new license, any repairs or modifications to the NRHP-eligible structures would be done in accordance with the Secretary of the Interior's Standards for Rehabilitation. In its new draft HPMP, PG&E specified the kind of routine maintenance activities at facilities which would require no additional consultations, special treatment measures, or mitigation.

The new draft HPMP indicated that there are 3 Madesi ethnohistoric village locations which are not correlated with a previously recorded archaeological site. If those locations should be impacted by a project-related activity in the future, PG&E would consult with the Tribe, SHPO, and the FS (if appropriate) to determine the measures required to mitigate those effects.

Other Recommended Measures

In a letter to the Commission dated October 9, 2002, the FS noted that cultural resources in the project area are being affected by erosion and human activities, that the HPMP written in 1987 is outdated, and that the Lake Britton Archaeological District listed on the NRHP in 1975 is outdated. The FS recommends, as a final Section 4(e) condition, that within 1 year after the new license is issued PG&E should file an HPMP approved by the FS and developed in consultation with the SHPO, Tribe, the FS, and other applicable agencies and communities. The mitigation measures in the HPMP should include monitoring and patrolling programs. The HPMP should be incorporated into the Programmatic Agreement (PA) by reference, and the FS should be a signatory to the PA. The HPMP should accurately define the APE and take into account project effects on NRHP-eligible properties, the NRHP archaeological District, and sites of traditional cultural value to Native Americans on FS managed lands. The new NRHP archaeological District should be filed within one year after license issuance. If, prior to or during ground-disturbing activities or as a result of project activity, items of potential cultural, historical, archaeological, or paleontological value are reported or discovered on FS lands, work should cease in the affected area and PG&E should consult with the FS and SHPO, prepare a plan, file the plan and comments of the FS and SHPO with the Commission, and take mitigation actions. Finally, the FS recommends, as a final Section 4(e) condition, that PG&E file a plan for patrolling the project to check adherence with the HPMP.

In its letter dated October 9, 2002, Interior recommends that, within 1 year after license issuance, PG&E submit for Commission approval an HPMP, developed in

consultation with the Tribe, NPS, and SHPO, to provide for identification, evaluation, assessment, and treatment of cultural resources within the APE. In addition, Interior recommends that PG&E do the following:

- Fund handling of archaeological materials and records recovered or developed as a result of cultural resource surveys or excavations within the APE, and also fund a suitable repository for necessary long-term curatorial services. In addition, within 1 year after license issuance, funds should be allocated for tribal staff participation in cultural resources related mitigation programs.
- Include in Interior's recommended erosion control plan (discussed in section 3.3.1.2, *Water Resources*) a program to protect or stabilize cultural resource sites that unauthorized ORV use and other unnatural causes have affected.
- Submit, within 1 year of license issuance, a plan for ongoing cultural resource monitoring, developed in consultation with the Tribe, SHPO, NPS, and the FS. The monitoring should assess effects from project activities, recreational use, vandalism, and erosion. The plan should include surveillance cameras, periodic patrols, and communications equipment to dispatch local law enforcement authorities.
- Establish, in consultation with the Tribe, a program that provides tribal members access to traditional gathering areas. The plan should include methods to ensure accessibility, notification to licensee personnel prior to entrance, and measures for limiting access by non-tribal members to such gathering sites.
- Nominate, within 1 year of license issuance, in consultation with the Tribe, the project area for registration on the NRHP.
- Expand the APE and Cultural District, within 6 months of license issuance, to include all traditional cultural properties, according to results of archaeological and ethnographic studies currently under way.
- Develop, within 1 year of license issuance, in consultation with the Tribe, SHPO, NPS, and FS, a vandalism awareness program plan, to educate visitors to the project area about the sensitive nature of cultural resources and the legal and ethical obligations to protect such sites. In addition, as part of the Recreation Management Plan mentioned earlier in this EIS, an Interpretive and Educational Plan should be developed that addresses local history, the history of the Pit 3, 4, and 5 hydroelectric system facilities, Native American history, and human impacts on cultural resources.

- Within 1 year of license issuance, submit for Commission approval a plan, developed in consultation with the Tribe, NPS, and FS, to limit new recreational developments that may affect cultural resources in the APE.

The Tribe has filed multiple letters at the Commission commenting on cultural resource issues. In a memorandum dated December 11, 2001, the Tribe requested that the HPMP and any PA which should be developed for this undertaking be mandated through an enforceable condition or numbered article to the new license. The Tribe indicated that the HPMP should address increased monitoring, enforcement, mitigation of impacts, cumulative effects, and protocols for dealing with the Tribe.

In a letter dated June 6, 2002, the Tribe indicated it supported the concept of a revised NRHP District which would encompass the entire APE and include traditional cultural properties. The Tribe reiterated its previous request that PG&E revise the HPMP to address its comments.

In scoping comments dated June 19, 2002, the Tribe restated its request that cumulative effects, including recreation, on cultural resources be studied. PG&E's definition of the APE was questioned, because the Tribe feels it would not cover all direct and indirect effects associated with the project. The Tribe also indicated concerns about project-related effects on fisheries and native plants, which are discussed elsewhere in this EA (see section 3.3.2, *Aquatic Resources*, and section 3.3.3, *Terrestrial Resources*).

By letter dated October 10, 2002, the Tribe indicated that the version of the HPMP it received from PG&E on September 24, 2002 (which is the same documented filed at the Commission on October 11, 2002) requires further modifications before it could be considered a final draft. The Tribe recommends that the HPMP address mitigation measures for damage to cultural resources (including bank stabilization) and provide measures such as improved signage, barriers, and road closings to ensure protection of cultural resources. Other measures suggested by the Tribe include training of tribal members for monitoring or patrolling; establishing a fund to ensure enforcement measures, including a police presence; PG&E posting a bond for damages to cultural resources due to lack of enforcement; and providing free electricity to tribal members. The Tribe also recommends that PG&E conduct supplemental ethnographic studies covering dance areas, fasting areas, and other traditional uses. In addition, the Tribe recommends that the entire APE should be listed as a Traditional Cultural Place. The Tribe reiterated its request for a study of the feasibility of reintroducing native plants for traditional gathering purposes, and the elimination of non-native plants and noxious weeds. Finally, the Tribe recommends that one license article should require the PRCT to convene 2 years after license issuance to discuss impacts, and another license article should require that if the Tribe objects to any

licensee action or failure to act that results in adverse effects on project-area cultural resources, it may file its objections with the Commission within 6 months.

A letter dated October 30, 2003, from California Indian Legal Services on behalf of the Tribe, comments on the PRCT agreement. The Tribe requests a license condition to require measures to mitigate for the loss of homelands, means of subsistence, and traditional ways of life. The Tribe indicates that it is currently negotiating with PG&E regarding these issues, and suggested mitigation measures include PG&E contracting various aspects of operation or maintenance services with the Tribe; providing training and educational funds for tribal members; employing tribal members as cultural resources monitors, or in the restoration of native plant gathering areas; providing power and water to tribal members; increasing opportunities for the Tribe to acquire land or easements; establishing a native plant nursery and cultural facilities for the Tribe; and conducting a feasibility study for the restoration of salmon passage.

Our Analysis

The license for the Pit 3, 4, and 5 Project (FERC No. 233) issued in 1981 included as Article 40 a requirement that PG&E, in cooperation with the SHPO, develop an HPMP to contain measures to protect cultural resources and mitigate impacts from project operations and use. In 1987, PG&E produced an HPMP to comply with that requirement. In addition, in 1989, the Commission executed a PA, signed by the SHPO and Advisory Council on Historic Preservation (ACHP), governing the resolution of adverse effects on historic properties resulting from project-related activities. However, we view PG&E's application for a new license as a separate undertaking. Therefore, we intend to execute a new PA to cover the new license. We sent out a draft PA on February 27, 2004, requesting that the SHPO and ACHP be signatories to the PA and that the Tribe and FS be concurring parties. The PA should be executed prior to license issuance, and will require adverse effects on cultural resources to be resolved according to an HPMP. We recommend that the Commission issuing the new license include an article requiring that the measures outlined in the PA and HPMP be implemented.

We agree with the FS that the District listed on the NRHP in 1975 is in need of revision, and the 1987 HPMP is outdated. PG&E filed a new draft HPMP on October 11, 2002. We agree with the Tribe that this new HPMP should be considered a draft, and must be further revised to address issues raised by the Tribe and other consulting parties. The new PA we intend to execute for this project will require the implementation of an HPMP within 1 year of license issuance. The final HPMP should be based on the new draft HPMP, and address comments on the draft made by the Tribe, the FS, and other consulting parties. On April 7, 2003, PG&E filed with the Commission a draft revised NRHP District nomination form, and this document was also provided to the Tribe and the FS for

comments. The final HPMP should require the filing of a final revised NRHP nomination for the Lake Britton Archaeological District. The revised nomination should address comments on the draft, expand the District boundaries to encompass the entire APE, and include archaeological, ethnographic, and historical data on cultural resources identified since 1975.

The Tribe requested that PG&E conduct additional ethnographic studies, covering dance areas, fasting areas, and other traditional practices and land use. The Tribe also requested a study of the feasibility of reintroducing native plants and controlling the spread of non-native plants and noxious weeds. We address weed control and reintroduction of plants in section 3.3.3, *Terrestrial Resources*. Interior recommends that PG&E afford tribal members access to traditional gathering areas. Including such a provision in the final HPMP would be consistent with the American Indian Religious Freedom Act. PG&E and the Tribe have entered into a Memorandum of Understanding for the conduct of a new ethnographic study to identify additional traditional cultural properties, including traditional plant gathering locations, within the APE. We expect this study to include recommended measures for the protection of traditional gathering areas, and mitigation of impacts on botanical resources and other traditional cultural properties considered significant by the Tribe. Data from the new ethnographic study should be included in the revised NRHP District nomination to be prepared by PG&E, and incorporated into the final HPMP.

The Tribe requested that the APE be redefined. We will not require this, because we believe that the APE as defined by PG&E, and accepted by the SHPO, covers the area where project-related activities may have impacts on cultural resources. We concur with PG&E's assessment of effects on cultural resources within the APE shown in table 50. However, if over the term of the new license, project operations or project related activities that could affect historic properties are planned in locations outside the existing APE, then the APE would be expanded to include those areas and any historic properties within those areas would be identified and treated according to the HPMP. Additional historic properties within the existing APE that may be discovered over the license term would be treated in the same manner.

Interior recommends that PG&E establish a repository for curation of archaeological materials and records. PG&E has already funded such a curation facility, and in the new draft HPMP, PG&E commits to curating any additional archaeological materials recovered on PG&E land at this existing facility in consultation with the Tribe. We therefore expect this issue to be further refined when the HPMP is finalized and approved by the Commission.

Both Interior and the Tribe raise the issue of training and use of tribal members for monitoring and patrolling. We believe this issue is best resolved through further consultations between PG&E and the Tribe, and handled within the context of the final HPMP.

Both Interior and the Tribe indicate concerns about vandalism. Interior recommends that PG&E implement a monitoring program against vandalism that should include surveillance cameras, patrols, and communications equipment for dispatching local law enforcement activities. In addition, Interior recommends that PG&E have a program to protect cultural resources for unauthorized ORV use. PG&E addressed vandalism and monitoring in its new draft HPMP. The new draft HPMP also discusses road closures and use of barriers to discourage ORV traffic outside of authorized areas which may impact cultural resources. We address unauthorized ORV use, vandalism, and law enforcement in section 3.3.6.2, *Land Use and Aesthetic Resources*.

Interior recommends that PG&E should prepare a vandalism awareness program plan, and an interpretive and educational plan, to be included as part of PG&E's recreation management plan, which addresses project history, prehistory, and culture. In addition, Interior recommends a condition which would require a limit to new recreational developments that may affect cultural resources. We previously discussed the interpretive and education plan and limits on new recreational developments in section 3.3.5, *Recreational Resources*. In section 3.3.6.2, *Land Use and Aesthetic Resources*, we do not conclude that a separate vandalism awareness plan should be prepared by PG&E, because it appears to be redundant with the HPMP and the proposed project recreational management plan.

The FS recommends that PG&E address conflicts between boating and archaeological resources. PG&E's final HPMP would address monitoring of erosion-prone sites and stabilizing these areas, as appropriate. Although we conclude that PG&E should cooperate in publicizing safe boating practices and how such factors as boat wakes from speeding boats can damage cultural and other environmental resources, we consider the establishment of speed limits on public waters to be the state's responsibility and enforcement of those regulations to be the state's and county's responsibility (see section 3.3.5.2, *Recreational Resources*, and section 3.3.6.2, *Land Use and Aesthetic Resources*).

The Tribe recommends that any new license that may be issued for this project include an article that allows it to file objections to PG&E's actions, if deemed warranted by the Tribe. We note that any party may file comments, including objections, with the Commission at any time without the need for a special license article granting this authority. In addition, the PA, to which the Tribe would be a concurring party, would

include provisions for dispute resolution and amendment. We conclude that a specific license article for this purpose is not needed.

Nor do we find it necessary to recommend a license article to require mitigation measures for the loss of Tribal lands, means of subsistence for tribal members, and impacts on traditional ways of life associated with the operation of the project. The request for mitigation of past effects on the Tribe and its members related to the original creation of the project in the 1920s is outside the framework of the FPA and the National Environmental Policy Act (NEPA). We use existing project conditions as the environmental baseline for our analyses under the NEPA. We see no direct relationship between the cost of electricity for Tribal members and this relicensing proceeding and do not agree that requiring the provision of free electricity to Tribal members is appropriate.

We present the estimated cost of all measures that pertain to cultural resources in chapter 4.0, *Developmental Analysis*, and make our final recommendations regarding these measures in section 5.2, *Comprehensive Development and Recommended Alternative*.

Project Decommissioning

If the project is decommissioned, the protection and enhancement measures that would be specified in the HPMP would not be implemented. Abandonment of the project facilities could lead to loss or deterioration of historically important project elements due to lack of repair, maintenance, and the protection afforded by active use. Consequently, prior to abandonment, PG&E would be required to consult with the SHPO to determine what provisions would be necessary to protect those project elements that contribute to their eligibility for listing in the National Register.

Removal of dams would constitute adverse effects on these National Register-eligible structures. If the dams were removed, however, loss or substantial diminution of Lake Britton could reduce recreation in the area and, therefore, possibly reduce the potential for effects associated with public visitation and recreational use. Sale of project land without adequate provisions to protect historic properties could cause damage to or loss of such properties.

3.3.7.3 Unavoidable adverse effects: None.

3.4 No-action Alternative

Under the No-action Alternative, PG&E would continue to operate the project under the terms and conditions of the current license. The environmental measures proposed by PG&E and/or recommended by staff, would not be implemented.

3.5 Irreversible and Irrecoverable Commitment of Resources

Continued operation of the existing project would continue to commit the lands and waters previously developed for energy production. This commitment of resources would not necessarily be irreversible or irretrievable because removal of the project dams and restoration of disturbed areas could return the project area to near pre-project conditions. However, given the substantial costs and the loss of energy, recreational, and socioeconomic benefits, removal of the dams is unlikely.

Under PG&E's proposed or the staff, agency, and NGO recommended alternatives, maintaining the new minimum flow regime would commit water for aquatic and riparian habitat enhancements instead of energy production and, depending on whether these increased flows come from decreased generation or increased utilization of inflow, upstream diversions to storage for agricultural purposes. While, over the short term, such losses of water may be considered irretrievable, any changes in flow requirements would not be irreversible over the longer term, since stream flows are a renewable resource and flow requirements could be changed in a license amendment proceeding or in any future license that may be issued for the project.

In addition, implementation of the staff recommended alternative, or certain measures recommended by others, would require the commitment of lands that would be developed for recreational enhancements (e.g., trails, reservoir and river public access sites, and development of current informal campgrounds and parking areas). However, our measures would not change the existing, informal usage of such land and, therefore, there would be no incremental irreversible or irretrievable commitment of resources.

3.6 Relationship Between Short-term Uses and Long-Term Productivity

Our recommended operating alternative for the project is expected to provide at least, an average of about 1,761,192,000 kilowatt-hours (kWh) of energy each year to the region. This long-term energy productivity would extend at least as long as the duration of the new license. Our recommendations are designed to minimize or avoid, in certain cases, long-term decreases in biological productivity of the system, as well as enhance aquatic habitat and local and regional recreational opportunities.

If the project was to operate solely to maximize hydroelectric generation, there could be a loss of long-term productivity of the river fisheries and perhaps sensitive invertebrates and amphibians (i.e., foothill yellow-legged frog), due to decreases in habitat availability. Moreover, many efforts to enhance recreational opportunities at the project would be foregone.

With our recommended operating mode, as well as with appropriate enhancement or protection measures, the project would continue to provide a low-cost, environmentally sound source of power. Moreover, the project, with our recommendations, would further the many goals and objectives identified by the agencies and other interested parties for managing the resources of the Pit River and Lake Britton.

4.0 DEVELOPMENTAL ANALYSIS

In this section, we analyze the project's use of the water resources of the Pit River to generate power, estimate the economic benefits of the Pit 3, 4, 5 Project, and estimate the cost of various environmental protection and enhancement measures and the effects of these measures on project operations.

Under its approach to evaluating the economics of hydropower projects, as articulated in Mead Corporation, Publishing Paper Division (72 FERC ¶ 61,027, July 13, 1995), the Commission employs an analysis that uses current costs to compare the costs of the project and likely alternative power with no consideration for potential future inflation, escalation, or deflation beyond the license issuance date. The Commission's economic analysis provides a general estimate of the potential power benefits and costs of a project and reasonable alternatives to project-generated power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

For our economic analysis of alternatives, we used the assumptions, values, and sources shown in table 51.

4.1 Power and Economic Benefits of the Proposed Project

As proposed by PG&E, the Pit 3, 4, 5 Project would generate an average of 1,761,192,000 kWh of electricity annually, have an annual power value of \$90,243,580 (51.24 mills/kWh), and total annual costs of \$12,604,450 (7.16 mills/kWh), resulting in a net annual benefit of \$77,639,120 (44.08 mills/kWh). Table 52 compares the power value, annual costs, and net benefits of the project as proposed by PG&E, with the staff alternative, no-action alternative, and project decommissioning.

4.2 Power and Economic Benefits of the Staff Alternative

Resource agencies, water companies, and NGOs recommended implementing a variety of measures at the project. Several of these entities recommended similar measures, but somewhat different from each other. Staff reviewed each recommendation and determined the measures that were most appropriate for implementation. Table 53 shows the effect on costs and power values of individual measures proposed by PG&E and recommended by staff and others, including the additional measures that staff has adopted. In section 5.2, *Comprehensive Development and Recommended Alternative*, we discuss our reasons for recommending the staff alternative and why we believe the environmental benefits are worth these costs.

As recommended by staff, the Pit 3, 4, 5 Project would generate an average of 1,761,192,000 kWh of electricity annually, have an annual power value of \$90,243,580 (51.24 mills/kWh), and total annual costs of \$12,310,010 (7.29 mills/kWh), resulting in a net annual benefit of \$77,412,570 (43.95 mills/kWh).

Table 51. Staff assumptions for economic analysis of the Pit 3, 4, 5 Project. (Source: Staff)

Assumption	Value
Energy value (2002) ^a	37.4 mills/kWh
Capacity value (2002) ^b	\$75/kilowatt-year (12.5 mills/kWh)
Period of analysis	30 years
Interest/discount rate ^c	8.0 percent
Cost of money ^c	8.0 percent
State and Federal income tax rate ^c	34.0 percent
Local tax rate ^c	3.0 percent
Insurance rate	0.25 percent of cost of construction
Term of financing	20 years
Escalation rate after 2002	0 percent
O&M costs (2002\$) ^d	\$4,383,420
Net investment (2002\$) ^e	\$43,993,350

^a PG&E provided the energy value, which includes 34 mills/kWh for energy plus 3.4 mills/kWh for ancillary services (PG&E, 2001). We assumed the same rate would apply for 2002.

^b PG&E provided the capacity value of \$75/kW-year, based on a dependable capacity of 325,000 kW.

^c These values reflect typical values as estimated by staff.

^d PG&E provided an estimate for normal O&M of \$3,300,000 per year for the project (PG&E, 2001). Staff escalated the 2000 value to 2002 and added \$940,000 for annual Commission fees (PG&E, 2001).

^e PG&E provided the current net investment value of \$28,800,000, assumed to be as of September 30, 2001. Staff then depreciated the net investment value to a December 31, 2002, value at a rate of 5.0 percent per year. PG&E also estimated that it would expend \$8,500,000 to relicense the project, exclusive of costs for protection, mitigation and enhancement costs (PG&E, 2001). Staff added the relicensing cost and \$8,493,350 to account for annual capital expenditures over the license term to the net investment value at the end of 2002 to calculate a new current net investment value for the project.

4.3 Power and Economic Benefits of the No-action Alternative

Under the no-action alternative, the Pit 3, 4, 5 Project generates an average of 1,913,686,000 kWh of electricity annually, has an annual power value of \$95,946,860 (50.14 mills/kWh), and total annual costs of \$10,173,600 (5.32 mills/kWh), resulting in a net annual benefit of \$85,773,260 (44.82 mills/kWh).

4.4 Power and Economic Benefits of the Project Decommissioning Alternative

Under project decommissioning (as indicated in section 2.3 of this final EIS), we evaluate the project with the decommissioning and removal of the Pit 3 dam, Pit 4 dam, and removal of the Pit 5 dam gates and gate lifting structure only. The gate slot piers and sills for the Pit 5 dam gates would be retained, since the piers also support a roadway across the Pit River which allows public access to the river corridor. Along with decommissioning these structures, remaining water conveyance structures would be sealed to prevent passage of water and to protect the public. We estimate this would result in capital costs of \$4,500,000 and annual O&M expenses of \$50,000. Project generation would cease and replacement energy would be acquired.

Under the project decommissioning alternative, the Pit 3,4, 5 Project would no longer generate electricity. The annual power value would represent the cost of purchasing equivalent replacement energy, specifically, 1,913,686,000 kWh. Since the cost would be an expense (rather than revenue), the power benefit would be -\$95,946,860 (-50.14 mills/kWh). Additionally, annual costs of \$642,270 (0.34 mills/kWh) corresponding to a levelized value of decommissioning the project would be incurred, resulting in a net annual benefit of -\$95,589,130 (-50.48 mill/kWh). The negative value represents a negative net benefit (or a net loss) when compared to the positive net benefit (or net gain) of other alternatives.

Table 52. Summary of the annual net benefits for the applicant's proposed action, applicant's proposed action with additional staff-adopted measures, no-action alternative, and project decommissioning alternative, for the Pit 3, 4, 5 Project. (Source: Staff)

	Applicant's proposed action	Applicant's proposed action with additional staff-adopted measures	No action	Project Decommissioning
Installed capacity (kW) ^a	317,250	317,250	317,250	0
Annual generation (kWh) ^b	1,761,192,000	1,761,192,000	1,913,686,000	0
Annual power value (mills/kWh)	\$90,243,580 51.24	\$90,243,580 51.24	\$95,946,860 50.14	-\$95,946,860 -50.14
Annual cost (mills/kWh)	\$12,604,450 7.16	\$12,310,010 7.29	\$10,173,600 5.32	\$642,270 0.34
Annual net benefit (mills/kWh)	\$77,639,120 44.08	\$77,412,570 43.95	\$85,773,260 44.82	-\$95,589,130 -50.48

^a The installed capacity of the Pit 3, 4, 5 Project developments is 74,250 kW, 93,000 kW, and 150,000 kW, respectively (license order dated January 24, 1994). The Commission establishes installed capacities based on the lower of the turbine and generator ratings. As such, all of the Pit 3, 4, and 5 units are considered to be "turbine-limited," in terms of their nameplate ratings, as the generator ratings total 330,330 kW. However, actual historical operation of the units demonstrates that the project has a dependable capacity of about 325,000 kW, which is the value we used in our economic analysis.

^b The average annual generation for the Pit 3, 4, and 5 Project developments was 434,900,000 kWh, 563,300,000 kWh, and 950,500,000 kWh, respectively, for the period from 1975-1999 (PG&E, 2001). Our estimated values for the No Action alternative for the Pit 3, 4, and 5 Project developments for water years 1974 to 2001 are 427,118,000 kWh, 550,467,000 kWh, and 936,101,000 kWh, respectively.

Table 53. Summary of capital and one-time costs, annual costs, annual energy costs, and total annualized costs of environmental measures proposed by the applicant and recommended by staff and others for the Pit 3, 4, 5 Project. (Source: Staff)

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
Water resources measures						
1. Develop and implement a water quality monitoring plan (BO condition 2.B).	Interior	\$50,000 *	\$100,000 *	\$0	\$106,580	No
2. Develop and implement a water temperature and DO monitoring plan (4(e) condition No. 22).	PG&E, FS, Interior	\$25,000 *	\$5,000 *	\$0	\$8,290	Yes
3. Develop an erosion and sedimentation control plan.	FS, Interior	\$10,000 *	\$1,000 *	\$0	\$2,320	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
4. Develop and implement a spoil pile management plan for all spoil piles (4(c) condition No. 20.a).	PG&E, FS	\$4,310,000 ^{a, b}	\$15,000	\$0	\$582,260 (\$365,360 for Pit 4, \$216,900 for Pit 5)	Yes
5. Develop and implement a stream flow and reservoir monitoring plan (4(e) condition No. 17.II).	PRCT	\$60,000	\$10,000	\$0	\$17,900 (\$11,930 for Pit 3 and 4, \$5,970 for Pit 5)	Yes
6. Finalize the plan to minimize out-of-season spill events (4(e) condition No. 18).	PRCT	\$15,000 ^a	\$0	Minimal	\$1,970	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
7. Provide minimum flows to the three bypassed reaches in accordance with the PRCT agreement (4(e) condition No. 17.I)	PRCT	\$8,400,000 ^b	\$15,000	\$5,600,580 (-149,748,000 kWh) ^c	\$6,721,140 (\$4,512,650 for Pit 3 and 4, \$2,108,490 for Pit 5)	Yes
8. Provide freshet flow releases in accordance with the PRCT agreement (4(e) condition No. 17.IV).	PRCT	\$0	\$0	\$19,710 (-527,000 kWh) ^d	\$19,710 (\$6,960 for Pit 3 and 4, \$12,750 for Pit 5)	Yes
9. Finalize the ramping rate plan for releases to the bypassed reach (4(e) condition No. 17.III).	PRCT	\$10,000 ^{a,e}	\$0	Minimal	\$1,320	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
10. Operate the Pit 3, 4, and 5 developments in accordance with the protocols in the PRCT agreement (4(e) condition No. 17.V)	PRCT	\$0	\$0	Likely minimal	Likely minimal	Yes
11. Manage Lake Britton water levels in accordance with the PRCT agreement (4(e) condition No. 17.V)	PRCT	\$0	\$0	Likely minimal	Minimal	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
Aquatic resource measures						
12. Develop a plan to monitor fish population and condition trends, spawning gravel status, and angler use in Pit 3, 4, and 5 bypassed reaches and reservoirs and invertebrates at Pit 3, 4, and 5 bypassed reaches at least every 3 years in the first 10 years, then at least once every 4 years (4(c) condition No. 23.b).	FS	\$10,000	(\$150,000 per event; 8 events)	\$0	\$41,180 (\$27,450 for Pit 3 and 4, \$13,730 for Pit 5)	No, although depending on the final schedule determined by the TRG, this measure is very similar to our recommendation

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
13. Conduct a fish monitoring program in the riverine reaches and Lake Britton every 3 to 5 years.	Tribe	\$10,000	\$10,890 (\$50,000 per event; 7 events)	\$0	\$12,210	No, see staff alternative
14. Develop a fish and invertebrate monitoring plan with provisions to monitor fish populations in the project reservoirs and bypassed reaches and conduct angler surveys in the bypassed reaches in years 1-4 and in years 8, 12, 16, 20, and 24.	PG&E, Interior, CDFG	\$10,000	\$65,470 (\$150,000 per event; 9 events)	\$0	\$66,790	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
15. Collect baseline data at the Pit 5 bypassed reach to enable evaluation of ecological effects of whitewater boating releases	PRCT	\$250,000	\$0	\$0	\$32,900	Yes
16. Environmental monitoring if whitewater releases are implemented	PRCT	\$150,000	\$0	\$0	\$19,740	Yes
17. Establish fish management plans for non-native fish species within reservoirs.	Trout Unlimited/ California Trout	\$20,000	\$0	\$0	\$2,630	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
18. Develop a gravel augmentation plan to increase spawning habitat in the upper portions of the Pit 3, Pit 4, and Pit 5 bypassed reaches (4(e) condition No. 21.1).	Interior, CDFG, FS, Trout Unlimited/ California Trout	\$20,000 ¹	\$31,760 (\$45,000 per year from year 5 through 30)	\$0	\$34,390 (\$22,930 for Pit 3 and 4, \$11,460 for Pit 5)	Yes
19. Develop a large woody debris management plan for the Pit 3, 4, and 5 bypassed reaches.	Trout Unlimited/ California Trout	\$415,000 ²	\$15,000	\$0	\$69,620	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
20. Develop and implement a woody/nutrient transport analysis and a plan for placement of wood debris from Lake Britton to the Pit 3 bypassed reach (4(e) condition No. 21.2).	Interior, FS, CDFG	\$10,000 ^h	\$10,000	\$0	\$11,320	Yes
21. Develop an operating procedure to facilitate passage of woody debris over the Pit 5 spillway	FS	\$5,000	\$2,000	\$0	\$2,660	Yes (provided it can be accomplished without major capital costs)

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
22. Maintain Hat Creek fish barrier.	PG&E, CDFG, SWRCB, Trout Unlimited/ California Trout	\$0	\$10,000	\$0	\$10,000	No
23. Supply materials, archeological investigations, monitoring, and mitigation required for needed maintenance of the Hat Creek fish barrier (CDFG would provide planning, permitting, and construction costs)	PG&E, FS, CDFG	\$30,000	\$5,000	\$0	\$8,950	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
24. Fund the implementation of portions of the Hat Creek Wild Trout Area management plan.	PG&E, CDFG, SWRCB, California Trout	\$0	\$12,340 ¹ (max total of \$150,000 for years 1-10; \$100,000 for years 11-20; \$50,000 for years 21-30)	\$0	\$12,340	No
25. Develop a fish passage investigation plan.	Interior, Tribe, NMFS	\$30,000	\$0	\$0	\$3,950	No
26. Study feasibility of dam removal.	Tribe	\$50,000	\$0	\$0	\$6,580	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
27. Develop a biological monitoring and adaptive management program (4(e) condition No. 23.a).	Interior, CDPR, Trout Unlimited/ California Trout, FS	\$14,000	\$4,000	\$0	\$5,840	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
Terrestrial resources						
28. Develop a vegetation management plan for project lands with annual monitoring (4(e) condition No. 23.g).	PG&E, FS, Interior	\$68,000*	\$6,000*	\$0	\$14,950 (\$9,970 for Pit 3 and 4, \$4,980 for Pit 5)	Yes
29. Develop a noxious weed management plan for all project lands and Pit 3, 4, and 5 bypassed reaches with annual monitoring (4(e) condition No. 23.g).	PG&E, FS, Interior, Tribe	\$164,000*	\$32,800*	\$0	\$54,380 (\$36,250 for Pit 3 and 4, \$18,130 for Pit 5)	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
30. Develop fire management measures (4(e) condition No. 20.b; BO condition No. 2.C).	FS, Interior	\$14,000 *	\$1,000 *	\$0	\$2,840 (\$1,890 for Pit 3 and 4, \$950 for Pit 5)	Yes
31. Develop a riparian monitoring plan for river channels downstream of Lake Britton in years 1-4 and in years 8, 12, 16, 20, and 24.	PG&E, Interior, CDFG	\$16,000 *	\$7,860* (\$18,000 per event; 9 events)	\$0	\$9,970	Yes
32. Monitor populations of bank swallow colonies around Lake Britton every 5 years (4(e) condition No. 23.f).	PG&E, FS	\$1,000*	\$1,220* (\$5,000 per event; 6 events)	\$0	\$1,350	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
33. Construct a bat-friendly gate at the Pit 4 adit entrance with annual inspections and maintenance (4(e) condition No. 23.f).	PG&E, FS	\$15,000	\$100	\$0	\$2,070	Yes
34. Conduct wildlife surveys every 5 years.	Interior	\$8,000*	\$17,130*	\$0	\$18,180	Yes
35. Develop a peregrine falcon annual monitoring plan and monitor peregrine falcon nest territories (4(e) condition No. 23.f).	PG&E, FS, Interior	\$3,000*	\$5,000*	\$0	\$5,390	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
36. Develop a foothill yellow-legged frog monitoring plan, conduct a 4-year study (at least), and monitor in years 8, 12, 16, 20, 24, and 28 (4(e) condition No. 23.c).	FS, Interior	\$300,000* (initial 4-year study)	\$7,680* (\$54,000 per monitoring event; 6 events)	\$0	\$47,160	Yes
37. Develop and implement a monitoring plan for western pond turtle (4(e) condition No. 23.d)	FS	\$2,000*	\$9,600*	\$0	\$9,860 (\$6,570 for Pit 3 and 4, \$3,290 for Pit 5)	Yes
38. Develop and implement a plan for the protection of the VELB (BO condition No. 2.F).	PG&E, FS, Interior	\$14,000*	\$0	\$0	\$1,840	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
39. Develop and implement a plan to map potential northern spotted owl habitat (BO condition No. 2.F).	PG&E, Interior	\$10,000 *	\$0	\$0	\$1,320	Yes
40. Revise IBEMP and update every 5 years (4(e) condition No. 23.e; BO condition No. 2.A).	PG&E, FS, Interior, CDFG, CDPR	\$25,000	\$320 (\$2,000 per update; 5 updates)	\$0	\$3,610	Yes
41. Update the BCMP and annually monitor for bald eagles.	PG&E, Interior	\$4,000	\$104,000	\$0	\$104,530	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
Recreational resource measures						
42. Develop and implement a recreation management plan (4(e) condition No. 26).	PG&E, Interior, CDFG, FS, Trout Unlimited/ California Trout	\$25,000	\$0	\$0	\$3,290	Yes
43. Develop a socioeconomic plan.	FS	\$8,000	\$0	\$0	\$1,050	No
44. Conduct recreation monitoring/survey and submit a report every 6 years (4(e) condition No. 26).	PG&E, FS, Interior, Trout Unlimited/ California Trout	\$10,000	\$2,610 (\$20,500 per event; 4 events)	\$0	\$3,930	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
45. Develop an interpretive and education plan for Lake Britton and Pit River Canyon area (4(e) condition No. 26).	PG&E, FS, Interior	\$35,000	\$5,000	\$0	\$9,610	Yes
46. Maintain recreational access and provide improvements at or near the Hat Creek fish barrier area (4(e) condition No. 26).	FS	\$250,000	\$27,000	\$0	\$59,900	Yes
47. Reconstruct and operate the Hat Creek Park.	FS	\$20,000	\$2,000	\$0	\$4,630	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
48. Improve and maintain road to car-top boat launch south of gasline crossing and close parking area on north side of Lake Britton (4(e) condition No. 26).	PG&E, FS	\$75,000	\$23,000	\$0	\$32,870	Yes
49. Evaluate management options for the North Ferry Crossing area.	PG&E, FS, Interior	\$20,000	\$1,000	\$0	\$3,630	Yes
50. Install pedestrian warning signs at Clark Creek Road.	PG&E, Interior	\$2,000	\$0	\$0	\$260	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
51. Provide additional day-use/beach capacity at Lake Britton (4(e) condition No. 26).	FS, Interior	\$75,000	\$5,000	\$0	\$14,870	Yes
52. Improve facilities at Dusty Campground (4(e) condition No. 26).	PG&E, FS, Interior, CDPR	\$75,000	\$5,000	\$0	\$14,870	Yes
53. Improve facilities at North Shore Campground.	PG&E, FS, Interior, CDPR	\$86,000 ^b	\$40,000 ^b	\$0	\$51,320	Yes
54. Keep North Shore Campground open on weekends through September.	FS	\$0	\$500	\$0	\$500	No
55. Construct a new campground in Lake Britton area.	FS, Interior	\$1,556,000 ^b	\$50,000	\$0	\$254,790	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
56. Move "no boating" buoy line at Lake Britton closer to dam (4(e) condition No. 26).	PG&E, FS, Interior	\$2,000	\$0	\$0	\$260	Yes
57. Assess and develop boating management options (4(e) condition No. 26).	PG&E, Interior	\$1,000	\$0	\$0	\$130	Yes
58. Make improvements at Jamo Point boat launch area (4(e) condition No. 26).	PG&E, FS, Interior	\$50,000	\$2,000	\$0	\$8,580	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
59. Make improvements to the existing boat launch and fishing platform at Jamo Point boat launch area (4(e) condition No. 23).	FS, Interior	\$50,000	\$2,000	\$0	\$8,580	No
60. Provide for weekend maintenance from Labor Day through the last weekend in September at both Jamo Point boat launch and Pines picnic area.	FS	\$0	\$500	\$0	\$500	Yes
61. Provide improvements at Burney Falls State Park.	FS, Interior, CDR	\$253,000 ^b	\$0	\$0	\$33,300	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
62. Construct a day-use area at the Pit 3 powerhouse tailrace (4(e) condition No. 26).	PG&E, FS, Interior, AWA, Shasta Paddlers, Chico Paddleheads	\$42,000 ^b	\$8,000 ^b	\$0	\$13,530	Yes
63. Construct fishing structure at Pit 3 powerhouse tailrace.	FS, Interior	\$15,000	\$1,000	\$0	\$2,970	No
64. Provide day-use access area at Pit 5 or Tunnel reservoirs.	FS, Interior, AWA, Shasta Paddlers, Chico Paddleheads	\$5,000	\$750	\$0	\$1,410	Yes
65. Improve and maintain Powder Spur Trail including provisions for a parking area at trailhead (4(e) condition No. 26).	PG&E, FS, Interior	\$29,000 ^b	\$2,000 ^b	\$0	\$5,820	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
66. Improve and maintain Delucci Ridge Trail (4(e) condition No. 26).	PG&E, FS, Interior	\$14,000 ^b	\$1,000 ^b	\$0	\$2,840	Yes
67. Improve and maintain Rock Creek Trail (4(e) condition No. 26).	PG&E, FS, Interior	\$4,000	\$1,000	\$0	\$1,530	Yes
68. Improve and maintain Malinda Gulch and Oak Flat trails (4(e) condition No. 26).	PG&E, FS, Interior	\$28,000	\$2,000	\$0	\$5,690	Yes
69. Improve and maintain Deep Creek and Little Joe Flat trails.	FS	\$28,000	\$2,000	\$0	\$5,690	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
70. Improve parking at Talus Siren by removing spoil piles (4(e) condition No. 26).	PG&E, FS	\$2,000	\$0	\$0	\$260	Yes
71. Develop spoil pile 4D into a canyon scenic overlook (4(e) condition No. 26).	PG&E, FS	\$3,500	\$250	\$0	\$710	Yes
72. Make improvements at Ruling Creek dispersed camping area (4(e) condition No. 26).	PG&E, FS, AWA, Shasta Paddleheads, Chico Paddleheads	\$38,000 ^b	\$2,000 ^b	\$0	\$7,000	Yes
73. Construct full-service campground near Camp Pit.	FS	\$210,000 ^b	\$13,000 ^b	\$0	\$40,640	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
74. Remodel and open cabins at Camp Pit to the public.	FS	\$10,000	\$1,000	\$0	\$2,320	No
75. Evaluate options for a campground within Pit River Canyon.	PG&E, Interior	\$1,000	\$0	\$0	\$130	Yes
76. Conduct FS-approved safety analysis of upramping rates to protect public safety.	FS	\$2,500	\$0	\$0	\$330	No
77. Provide whitewater boating access points to the Pit 3, 4, and 5 bypass reaches (4(e) condition No. 26).	PG&E, FS; AWA, Shasta Paddlers, and Chico Paddleheads	\$30,000	\$5,000	\$0	\$8,950 (\$5,970 for Pit 3 and 4, \$2,980 for Pit 5)	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
78. Provide summer weekend whitewater boating releases to the Pit 4 and 5 bypassed reaches.	Shasta Paddlers and Chico Paddleheads	\$0	\$0	\$340,640 (-9,108,000 kWh) ¹	\$340,640	No
79. Develop a whitewater boating release plan.	PRCT	\$20,000	\$0	\$0	\$2,630	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
80. Provide 2 days of weekend whitewater releases of 1,500 cfs from 10 AM to 4 PM in August and 3 days of weekend whitewater releases of 1,200 cfs in September at the Pit 5 dam, contingent on the results of baseline data and monitoring during releases	PRCT (except for the Tribe)	\$0	\$0	\$83,000 (-2,219,000 kWh) [†]	\$83,000	Yes (contingent on baseline data assessment)

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
81. Monitor boater use during first 3 years, <u>if</u> whitewater releases are implemented (use would also be monitored if the number of releases is increased or decreased)	PRCT	\$0	\$670 (\$4,000 per year in years 5, 6, 7) ¹	\$0	\$670	Yes
82. Provide flow information to the public via phone and Internet (4(e) condition No. 17.II and 26).	PRCT	\$50,000	\$10,000	\$0	\$16,580	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
Land and aesthetic resource measures						
83. Complete a roads and facilities management plan (4(e) condition No. 27).	PG&E, FS	\$20,000	\$0	\$0	\$2,630	Yes
84. Complete and implement a plan to identify access roads and parking areas to be closed to vehicular traffic (4(e) condition No. 27).	PG&E, Interior, FS	\$30,000	\$5,000	\$0	\$8,950	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
85. Develop and implement an off-highway vehicle and vehicle management plan for the Lake Britton area (4(e) condition No. 27).	PG&E, FS, Interior	\$40,000	\$5,000	\$0	\$10,260	Yes
86. Rehabilitate and maintain existing project roads (4(e) condition No. 27).	FS, Interior	\$50,000	\$5,000	\$0	\$11,580	Yes
87. Provide Highway 89 entrance signage.	Interior	\$1,500	\$0	\$0	\$200	No
88. Pave 1.5 miles of Hagen Flat Road from Camp Pit to the Pit 5 dam	FS	\$600,000	\$0	\$0	\$78,970	No

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
89. Conduct traffic-use surveys every 6 years (4(e) condition No. 27).	PG&E, FS	\$0	\$3,060 (\$24,000 per event; 4 events)	\$0	\$3,060	Yes
90. Develop a law enforcement, vandalism awareness, monitoring and patrol plan.	Interior, Tribe	\$8,000	\$2,000	\$0	\$3,050	No
91. Provide increased law enforcement and management presence.	Interior, CDP, Tribe	\$0	\$25,000	\$0	\$25,000	No
92. Develop a plan for providing full time patrol of the project for resource protection (4(e) condition No. 25).	FS	\$8,000	\$25,000 ^m	\$0	\$26,050	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including O&M (2002\$)	Annual energy costs (2002\$)	Total annualized cost (2002\$)	Adopted by staff?
93. Develop a fire management and response plan (4(e) condition No. 20.b; BO condition No. 2.C).	PG&E, FS, Interior	\$20,000 *	\$2,000 *	\$0	\$4,630	Yes
94. Develop and implement a sign plan (4(e) condition No. 20.d).	FS	Costs would be incurred during other plan development	Costs would be incurred during other plan development	\$0	\$0	Yes
95. Develop and implement a visual resource management plan (4(e) condition No. 20.c).	PG&E, FS	\$10,000 *	\$1,000 *	\$0	\$2,320	Yes

Environmental measures	Recommending entity	Capital and one-time costs (2002\$)	Annual costs, including		Total annualized cost (2002\$)	Adopted by staff?
			O&M (2002\$)	Annual energy costs (2002\$)		
Cultural resource measures						
96. Prepare a revised HPMP (4(e) condition No. 24).	PG&E, FS, Tribe, Interior	\$695,000 ^b	\$30,000 ^b	\$0	\$121,470	Yes

^a The actual cost to implement a plan would depend upon the details of the plan, which would be developed post-licensing during consultation. The costs included in this table are based on staff's best estimate based on the most recent description of the plan provided by the recommending entity.

^b PG&E provided cost in Exhibit H of license application (PG&E, 2001).

^c Our estimate of the energy loss associated with this measure is based on the following assumptions: 1) a spill event would occur every year on January 1, initiating winter flows; 2) no spill events would occur between November 1 and November 30; 3) no spill events would occur between March 16 and June 15. Assumes no change in dependable capacity of project.

^d Our estimate of the energy loss associated with this measure is based on the following assumptions: 1) a requisite 21-day freshet streamflow event had not occurred within the 17 months preceding January 1, so a freshet release would be required. Based on this assumptions, a freshet release would theoretically only be required in 2 years out of 30 at Pit 3, in 4 years out of 30 at Pit 4, and 2 years out of 30 at Pit 5. Therefore, we used the average energy loss over 30 years. Assumes no change in dependable capacity of project.

^e The cost to implement this measure could vary depending on the selected location at which ramping rate measurements would be taken, if existing equipment is used, or if new equipment would be required.

f This cost includes plan development and a space holder for the capital cost of facilities that may be needed to place gravel at the specified locations.

g Cost of potential capital improvements was provided by PG&E in its June 21, 2002, response to our AIR; we added \$15,000 to develop a plan and estimate increased O&M to be \$15,000 annually.

h PG&E has already conducted an analysis of woody debris transport; we estimate that it would cost approximately \$10,000 to develop a plan to pass woody debris at Lake Britton dam plus \$10,000 per year to implement the plan.

i Our estimate of the cost of this measure is based on the cost limitations provided by PG&E in their letter dated December 29, 2003 regarding the Hat Creek fish barrier and the Hat Creek Wild Trout Area.

j Our estimate of the energy loss associated with this measure is based on the assumption that the flows would ramp up uniformly starting at midnight and reaching the peak flow by 10 a.m., stay at the required recreational flow until 4 p.m., then ramp down uniformly, returning to the minimum flow requirement by midnight. Assumes no change in dependable capacity of project.

k Our cost of implementing this measure is based on 4 days of whitewater releases; the adaptive approach proposed by the PRCT agreement could adjust this total after the first 3 years of monitoring to a minimum of 3 days or, over a number of years, a maximum of 10 releases, including 2 in October. Our estimate of the energy loss associated with this measure is based on the following assumptions: 1) the flows would ramp up uniformly starting at midnight and reaching the peak flow by 10 a.m., stay at the required recreational flow until 4 p.m., then ramp down uniformly, returning to the minimum flow requirement by midnight; and 2) the releases would be made during the 46th and 50th weeks after October 1 (mid-August and mid-September). Assumes no change in dependable capacity of project.

l Our cost of implementing this measure is based on 4 days of whitewater releases; the adaptive approach proposed by the PRCT agreement could adjust this total after the first 3 years of monitoring to a minimum of 3 days or, over a number of years, a maximum of 10 releases, including 2 in October.

m Some of the cost associated with project patrols would be included in the cultural resource monitoring that would be included as a component of the HPMP.

5.0 STAFF'S CONCLUSIONS

5.1 Comparison of Proposed Action and Alternatives

Section 4(e) of the FPA directs the Commission to consider equally a broad range of developmental and environmental purposes in making licensing decisions. Section 10(a) directs the Commission to license projects that are best adapted to a comprehensive plan for improving or developing a waterway, which includes all relevant public considerations.

Based on our independent review and evaluation of PG&E's proposed action, staff's alternative, project decommissioning, and the no-action alternative, we recommend licensing the project for continued operation with some additions and modifications to PG&E's proposal. This alternative includes all but one of the environmental measures proposed by PG&E (see section 2.1.3, *Proposed Environmental Measures*), and the additional or modified measures that are listed in section 2.2.2, *Staff's Alternative*. We developed the staff's alternative after evaluating PG&E's proposal and recommendations and comments from resource agencies and other interested parties and individuals.

PG&E's proposed measures would protect and enhance the natural environment and the public's use and enjoyment of that environment. The one measure proposed by PG&E but not included in staff's alternative is PG&E's proposal to fund as yet unidentified management measures in the Hat Creek Wild Trout Management Area, which is upstream of the Hat Creek barrier dam. We have not been able to establish a linkage of this measure to project purposes.

Staff's alternative, in most cases, provides additional details of what we expect to be included in the development and implementation of PG&E's proposed environmental measures. Additional measures not proposed by PG&E that we recommend include: (1) implementation of a gravel augmentation plan; (2) a woody debris transport plan; (3) terrestrial mollusc, foothill yellow-legged frog, western pond turtle, and neotropical migrant bird monitoring plans; (4) a biological monitoring and adaptive management plan; (5) goshawk surveys, if influenced by project-related activities; (6) consultation with the FS regarding protection of FS sensitive species; (7) recreational access near the Hat Creek fish barrier; (8) additional day-use and campsite capacity in the vicinity of the project; (9) a day-use area at the Pit 5 or Tunnel reservoirs; (10) a plan to provide full time project patrol for resource protection; (11) a signage plan; and (12) modifications to the project boundary to include project-related features. Staff's alternative would provide the following benefits over PG&E's proposed measures: (1) aquatic habitat enhancement; (2) enable population trends of special status species to be tracked and, if necessary, adaptive adjustments made to project operations; (3) recreational opportunity enhancements; and (4) facilitate

monitoring of project-related features to identify the need for remedial measures and ensure that protective measures are functioning as planned.

Project decommissioning with dam removal would eliminate Lake Britton and the warmwater fishery would likely revert to a riverine coldwater fishery. Bald eagle foraging habitat would be reduced. Prevailing flows in the natural river channel downstream of the Pit 3 dam would be substantially higher than under current conditions, which would preclude anglers from wading in much of this reach, although fishing from the shoreline would likely be good. Bridges associated with project dams may be removed, which would alter public access and land use in the vicinity of the project because of the limited number of roads. Public use of many existing recreational facilities would be either substantially altered, or would cease. Project decommissioning would eliminate a source of 1,913.7 GWh of generation, and would not result in the restoration of anadromous fish to the Pit River. We concluded that there is no basis to decommission the Pit 3, 4, 5 Project.

The no-action alternative would result in the project continuing to operate as it is currently operated. The environmental protection and enhancement measures proposed by PG&E and recommended by staff would not be implemented.

5.2 Comprehensive Development and Recommended Alternative

Sections 4(e) and 10(a) of the FPA require the Commission to give equal consideration to all uses of the waterway on which the project is located. When we review a hydropower project, we consider the water quality, fish and wildlife, recreational, and other non-developmental values of the involved waterway equally with its electric energy and other developmental values. In determining whether, and under what conditions, to license a project, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

This section contains the basis for, and a summary of, our recommendations to the Commission for relicensing the Pit 3, 4, 5 Project. We weigh the costs and benefits of our recommended alternative against other proposed measures.

5.2.1 Recommended Alternative

Based on our independent review and evaluation of the proposed project, the proposed project with our additional recommended environmental measures, project decommissioning, and the No-action Alternative, we select the staff's alternative (proposed project with our additional recommended environmental measures) as the preferred alternative.

We recommend this alternative because: (1) issuance of a new license would allow PG&E to continue to operate the project as a dependable source of electric energy for its customers; (2) the 317.25-MW project would avoid the need for an equivalent amount of fossil-fuel fired electric generation and capacity, continuing to help conserve these nonrenewable energy resources while reducing atmospheric pollution; and (3) the recommended environmental measures would protect fish and terrestrial resources, improve public use of recreational facilities and resources, and maintain and protect historic and archaeological resources within the area affected by project operations.

We evaluated numerous recommendations in the resource sections and given the environmental benefits, we recommend that the following measures that PG&E proposes should be included in Staff's Alternative for any license issued by the Commission for the Pit, 3, 4, 5 Project:

1. Operate the Pit 3, Pit 4, and Pit 5 developments in accordance with the protocols established in the section of the Pit River Collaborative Team (PRCT) agreement entitled "Reservoir Operations" (see Appendix B for details of these protocols).
2. Provide minimum flows to each of the three bypassed reaches in accordance with the provisions in the section of the PRCT agreement entitled "Minimum Streamflows" (see Appendix B). Where facility modification is required to release the specified minimum flows, complete such modifications as soon as practicable and no later than 3 years from license issuance. Prior to completion of such modifications, make a good faith effort to meet the requirement of this measure within the capabilities of the existing facilities.
3. Provide freshet flow releases in accordance with the provisions in the section of the PRCT agreement entitled "Freshet Flow Releases."
4. Operate the project in a manner that does not cause discretionary, out-of-season spill flows in excess of twice the required minimum flows at the project dams, as specified in the section of the PRCT agreement entitled "Out-of-Season Spill Flows." The first priority in methods for achieving this goal would be the use of project storage capacity. Where facility modification is required to implement the requirements of this measure, complete such modifications as soon as practicable and no later than 3 years from license issuance. Prior to completion of such modifications, make a good faith effort to meet the requirement of this measure within the capabilities of the existing facilities.
5. Implement ramping rates in accordance with the provisions in the section of the PRCT agreement entitled "Ramping Rates." Where facility modification is required

to implement the requirements of this measure, complete such modifications as soon as practicable and no later than 3 years from license issuance. Prior to completion of such modifications, make a good faith effort to meet the requirement of this measure within the capabilities of the existing facilities.

6. Cooperate with California Department of Fish and Game (CDFG) in maintaining an effective fish barrier located on Hat Creek by providing the following (up to a maximum of 50 percent of the total annual maintenance cost): cost of materials; and archeological investigation, monitoring, and mitigation required for needed maintenance. (CDFG has agreed to be responsible for planning, permitting, and construction.)
7. In the event that it is necessary to replace the Hat Creek barrier dam, PG&E would, at a minimum, provide materials, archaeological review and coordination, and some equipment (up to \$1 million). (CDFG has agreed to provide design, planning, environmental review, permitting, and personnel to complete the replacement.)
8. Update the 1993 Biological Compliance Monitoring Plan (BCMP), implement the monitoring specified in the updated Interagency Bald Eagle Management Plan (IBEMP), and prepare a comprehensive report at 5-year intervals. The updated plan should include annual bald eagle breeding, productivity, and wintering surveys and maintain mapped information on nesting, roosting, and perch trees and foraging areas to monitor how these locations relate to proposed recreational facility construction or changes in recreational use patterns. The BCMP also would include fish monitoring. The plan should also include provisions to reduce the frequency or discontinue elements of the monitoring program if they are no longer necessary to protect bald eagle populations in the project area.
9. Include in the vegetation management plan and the final Historic Properties Management Plan (HPMP), as appropriate, provisions identified in the ongoing supplemental ethnographic studies that pertain to identification of ethnobotanical resources, including the potential establishment and protection of plant gathering sites and the incorporation of important species into plans for revegetation.
10. Construct a bat-friendly gate at the Pit 4 tunnel adit that would prevent public access while allowing bats to enter and exit.
11. Provide streamflow information to the public beginning no later than 1 year from license issuance, in accordance with the provisions in the section of the PRCT agreement entitled "Streamflow Information."

12. Improve and maintain the car-top boat launch facility near the gasoline crossing of Lake Britton, and keep it open from the last Saturday in April through December 31.
13. Close the parking area on the north side of Hat Creek.
14. Develop a plan that evaluate management options for the North Ferry Crossing area, to control environmental problems (i.e., sanitation-related and disturbance of sensitive cultural sites) that are occurring due to the current level of informal use, in consultation with the Tribe, the FS, FWS, CDFG, SWRCB, and CDPR.
15. Consult and cooperate with Shasta County regarding the installation of pedestrian warning signs at the Clark Creek Road crossing of the Pit 3 dam.
16. Implement the following improvements at the Dusty Campground: limit the expansion of the existing day-use area and provide interpretive signs to inform users of alternate day-use sites in the area; add picnic tables, as appropriate, to campsites and shoreline in areas where sensitive resources are not affected; construct or modify one campsite and adjacent restroom to be accessible to disabled persons; develop a potable water source within the campground; designate a swimming beach area to separate swimming and wading from boat beaching and mooring, which would provide additional safety measures and help avoid conflicts between recreational users; assess the potential to provide turnouts on access roads to the campground to allow vehicles to pass each other; assess the potential to expand the number of campsites; and assess the potential to augment or expand existing beach areas.
17. Move the "no boating" buoy line at Lake Britton closer to the dam.
18. Develop a plan that assesses options to address capacity issues at Lake Britton and assess recreational boating management options to help control potential recreational use conflicts.
19. Develop a day-use access area at the Pit 3 tailrace, to include such facilities as an accessible toilet, potable water, trash receptacles, and parking, which would provide both day-use fishing access to the tailrace area and access to the Pit 4 reservoir.
20. Develop a plan that assesses the feasibility of developing a campground in the Pit River Canyon within or adjacent to the project boundary, providing a site can be found that would have no or minimal impact on sensitive resources, does not conflict with neighboring land owners, is compatible with desired recreation experiences, and is project related.

21. Prepare a final HPMP, including site-specific protection measures and provisions for monitoring and patrol.

In addition to PG&E's proposed 21 measures that we and other entities are in agreement with, we recommend the following measures that either modify a measure proposed by PG&E, or are in addition to measures proposed by PG&E:

1. Develop and implement a water temperature monitoring plan, including monitoring during months when temperatures could be limiting to aquatic biota, which for most species would be from June through September. Temperature monitoring would also help to define the parameters that would optimize foothill yellow-legged frog reproduction, which typically occurs during the spring, and would serve as a basis for establishing the timing of spring freshet flow releases. Therefore, temperature monitoring during the spring would also occur at known or potential foothill yellow-legged frog habitat that project operations influence. Taking spot dissolved oxygen (DO) measurement and periodic temperature and DO profiles in Lake Britton near the Pit 3 dam during high temperature low flow conditions (which typically occur during July and August), would provide a basis for documenting that project operations are not violating applicable water quality criteria. This plan would be developed in consultation with the FS, FWS, CDFG, U.S. Environmental Protection Agency (EPA), and SWRCB within 1 year of license issuance. The plan would include the following:
 - the location of stations at which water temperature would be monitored;
 - the time frame during which water temperature would be monitored at each station;
 - the type of instrumentation, frequency of data collection, and calibration procedures that would be used to monitor temperature and DO;
 - temperature conditions that would trigger spot DO measurements at specific stations;
 - potential project operational procedures that could be implemented to maintain project waters at or below 20 degrees C (68 degrees F) and what circumstances would trigger implementation of those procedures;
 - the schedule for installation of temperature monitoring equipment; and

- procedures that would be followed to report the results of monitoring to the resource agencies and the Commission.
2. Develop and implement an erosion and sedimentation control plan that would cover those sites not addressed in other plans (e.g., recreation management and road management plans and the HPMP). For Lake Britton, this plan would entail periodic monitoring of the shoreline to identify actively eroding sites, assessing whether problems at identified sites are project-related and if stabilization measures are warranted, and, if warranted, provisions for designing and implementing shoreline stabilization in consultation with appropriate parties. The plan also would specify protocols for addressing emergency erosion and sedimentation control measures, both for immediate short-term stabilization and, if necessary, permanent long-term measures to replace any temporary stabilization measures that may have been implemented. The plan should include protocols for notification of the FS, SWRCB, and the Commission (at a minimum) in the event that emergency erosion and sedimentation control measures are needed. The plan would be developed within 1 year of license issuance in consultation with the Tribe, CDFG, FWS, SWRCB, and, as appropriate, the FS.
 3. Develop, within 1 year of license issuance, a single spoil pile management plan, in consultation with the FWS, CDFG, SWRCB, the Tribe, and, as appropriate, the FS, rather than the two related but separate plans proposed by PG&E. The plan would: (a) include proposed remedial measures for the Miners Creek spoil pile, including the measures recommended by PG&E's consultant, as appropriate; (b) specify management and maintenance measures for all spoil piles created during project construction; (c) address whether or not stabilization measures are warranted at the erosion site across the Pit River from spoil pile 4D; and (d) address the measures specified by the FS in its final 4(e) condition No. 20.a (see Appendix C for specific 4(e) elements).
 4. Develop a dredging plan, should dredging in project waters be needed during the term of a new license. The plan would be developed prior to conducting any dredging operation in project waters, in consultation with the FWS, SWRCB, CDFG, U.S. Army Corps of Engineers (Corps), EPA, and, if the operation would affect National Forest System Lands, the FS, that includes the following: (a) a description of the need for the proposed dredging; (b) the selected method of dredging, and alternative methods considered; (c) a figure showing the areal extent of the dredging; (d) the estimated volume to be dredged; (e) a description of the substrate to be dredged; (f) a figure showing the proposed dredge spoil disposal site, with a description of measures to prevent erosion and sedimentation; and (g) a schedule for dredging, dredge disposal, and dredge spoil pile stabilization.

5. Develop a streamflow and reservoir level monitoring plan that includes provisions to measure streamflow, as specified in the section of the PRCT agreement entitled "Minimum Streamflows." In the Pit 3 reach this would be accomplished by using the sum of spillway flow calculated from hourly reservoir elevation to account for spill volume and the hourly mean release from a calibrated release valve at the dam or by other means acceptable to the U.S. Geological Survey (USGS); in the Pit 4 reach this would be accomplished at USGS gage No. 11362500; and in the Pit 5 reach this would be accomplished at USGS gage No. 11363000. The plan would be developed within 1 year of license issuance, in consultation with the FS, FWS, CDFG, SWRCB, and USGS. The plan would include the following components and considerations:
 - a description of the existing flow and any existing water surface elevation monitoring devices, including location and type of instrumentation;
 - installation and/or calibration of a water release system from the Pit 3 dam, which can accurately provide the flow regime specified in the license order;
 - the proposed frequency of data downloads, how the data would be accessed during the term of the new license, and the proposed technique and frequency of calibration (for those existing flow gaging stations that are operated in cooperation with USGS, we anticipate that future calibration would be similar to current calibration procedures);
 - a detailed description of any structural modifications that would be necessary to accommodate the flow regime (and its measurement) specified in the new license, including design drawings, conceptual cost estimates, and schedule for implementation of the proposed modifications;
 - proposed interim measures to comply with required flow releases until structural modifications have been completed;
 - identification of the entities responsible for installing, maintaining, and ensuring the continued accuracy of the flow and water surface elevation monitoring devices; and
 - reporting frequencies to appropriate agencies and the Commission.

6. Develop and implement a fish and invertebrate monitoring plan that is based on the methods used in surveys conducted during the relicensing effort and the current

BCMP, including angler surveys, reservoir fish surveys, river reach surveys, macroinvertebrate surveys, and aquatic mollusc surveys. This plan would be developed within 6 months of license issuance, and for surveys in years 1 through 4 and in years 8, 12, 16, 20, and 24 (unless an alternative monitoring schedule is approved by the Commission), in consultation with the FS, CDFG, FWS, and the Tribe, at a minimum; coordinate the monitoring plan with the BCMP, gravel augmentation, and the collection of baseline data for potential recreation streamflow releases to the Pit 5 reach, to avoid redundancy.

7. Develop, within 1 year of license issuance, a gravel augmentation plan to increase trout spawning habitat in the upper portions of the Pit 3, Pit 4, and Pit 5 bypassed reaches, in consultation with the FS, CDFG, FWS, and SWRCB, with a total combined annual cost cap of \$45,000 for the procurement, delivery, and placement of gravel in all three reaches; in addition, include provisions for monitoring of invertebrates, trout populations, and gravel abundance at representative locations; the plan should include provisions to adjust the quantity and location where gravel is placed based on monitoring results, while maintaining annual program costs within the cost cap.
8. Develop, within 1 year of license issuance, a woody debris transport plan for placement of woody debris from Lake Britton to the Pit 3 bypassed reach and, if feasible, from the Pit 5 reservoir to the Pit 5 bypassed reach, using operational modifications (i.e., no additional structural modifications), in consultation with the FS, FWS, and CDFG; appropriate portions of PG&E's existing woody debris transport analysis should be included in the plan to provide perspective.
9. Develop within 2 years of license issuance, in consultation with the FS, Shasta County Agricultural Commissioner, CDFA, FWS, NPS, CNPS, CDFG, the Tribe, and local landowners, at a minimum, a vegetation and noxious weed management plan for all project lands, rather than PG&E's proposed separate plans for noxious weed control and vegetation management, that provides for the following: (a) protection of special status plants that includes maintenance of a project GIS database that would allow mapping and tracking occurrences of special status plants, including Pacific fuzzwort, in order to assist in evaluating plans for vegetation management, developing protocols for maintenance personnel that may be working in areas near known sensitive plant locations, siting for new recreational facilities, and other activities that would cause ground disturbance or habitat alteration; (b) improvement of wildlife habitat, including fire fuel load reduction measures (for any such measures, consult with the FS to evaluate the consistency with the FS standards and guidelines for management of the Chalk Mountain LSR, and protection of listed and

sensitive species); (c) enhancement of ethnobotanical resources; and (d) control of noxious weeds (including in the bypassed reaches), including the following:

- provisions for noxious weed surveys and management on all PG&E project lands, including transmission line and access road rights-of-way and recreational facilities;
 - identification of management responsibilities, goals, and objectives;
 - definitions of realistic control intensities for each noxious weed that meet management objectives;
 - comparisons and evaluations of resource trade-offs of various control methods;
 - prioritization of treatment sites;
 - presentation of an integrated noxious weed treatment scenario, including plans for long-term monitoring; and details of a plan for action, showing a schedule for implementation, funding requirements, and a mechanism for annual review and revision of the plan to incorporate information collected during monitoring efforts;
 - proposed measures for revegetation following noxious weed treatments;
 - emphasis on education and other pro-active measures (e.g., washing down construction equipment, certifying fill materials, public education and signing of public boat access points to prevent aquatic weed infestations) to prevent establishment and spread of weeds;
 - emphasis on the use of non-herbicide techniques, and allow for herbicide use, if any, only at specific sites; for these sites, the plan should indicate why other techniques would not be effective and identify measures that would be taken to protect non-target plants and animals; and
 - incorporation of noxious weed monitoring into other programs PG&E would be implementing, where possible, to maximize the potential for detection and early treatment.
10. Develop and implement a riparian vegetation monitoring plan for the three bypassed reaches to document changes over time and in response to any new instream flow

requirements. The plan would be developed within 1 year of license issuance in consultation with the FS, FWS, CDFG, and the Tribe to identify measurable riparian habitat parameters, survey protocols and timing, and provisions for reporting, prior to submission to the Commission for approval.

11. Develop methods to prevent bats from entering the stairway chamber at the Pit 5 dam and the control room at the Pit 5 gaging station to minimize human/bat interactions. Implement measures, following consultation with a recognized bat expert, to exclude bats from the stairwell chamber at the Pit 5 dam and the control room at the Pit 5 gaging station, and provide for annual inspections of structures designed and installed to protect bats at the Pit 4 tunnel adit, and exclude bats at the Pit 5 dam, and Pit 5 gaging station control room. Monitoring is needed to ensure the structures are functional and properly maintained and should be coordinated with our recommendation for PG&E to provide full time project patrol (see item number 29).
12. Develop bank swallow monitoring protocols including the timing and frequency of monitoring and provisions for reporting. Include in the protocols measures to coordinate bank swallow monitoring with the results of other Lake Britton erosion monitoring that would occur under our recommended erosion and sedimentation control plan and the final HPMP. Develop the protocols within 1 year of license issuance in consultation with the FS, FWS, and CDFG, at a minimum.
13. Develop and implement plans to monitor neotropical migrant songbirds (using point count surveys to monitor breeding populations) and terrestrial molluscs that could be affected by changes in riparian habitat as a result of increased flows in the bypassed reaches and other changes to the project (e.g., construction of modified or new recreational facilities), within 1 year of license issuance, in consultation with the FS, FWS, and CDFG, at a minimum; surveys for neotropical migrants would be conducted annually for 5 years following implementation of the new flow regime, and then at 5-year intervals through any new license term to monitor changes over time. Surveys for terrestrial molluscs should occur prior to construction or modification of project-related facilities that may influence potential habitat, and the survey results should be used to determine appropriate protective measures, if any.
14. Conduct northern goshawk surveys, if it is determined that project-related construction measures and vegetation management activities would affect potential nesting habitat; if nests are detected, consult with the FS, CDFG, and FS regarding the need for implementing timing or spatial restrictions, or both, to protect them from disturbance.

15. Conduct annual surveys of known peregrine falcon nesting territories, and note any project-related activities in the vicinity (within 0.25 miles) of the nest territories and any behavioral responses observed. Consult with the FS, FWS, and CDFG prior to initiation of the annual surveys to determine if adjustments to the timing of the proposed peregrine falcon surveys and the survey protocol to match the guidelines of the federal monitoring plan (FWS, 2003) are warranted.

16. Develop a foothill yellow-legged frog monitoring plan within 1 year of license issuance, in consultation with the FS, CDFG, and FWS, at a minimum, that includes provisions for conducting a 4-year study (at a minimum) of breeding site characteristics that includes the following:
 - surveys of foothill yellow-legged frog distribution in the Pit 4 reach throughout the spring and summer to determine presence and life stage development as well as distribution and presence in the Pit 3 and Pit 5 reach (latter to be coordinated with baseline data collection for the recreation streamflow release plan);
 - a more thorough search during the spring breeding season to identify population centers and breeding sites and count numbers of clutches found;
 - descriptions of the physical features of all identified frog breeding sites, including substrate, water temperature at the onset of egg deposition, vegetative cover, water velocities at egg deposition sites, canopy categories, patch size channel habitat type, and evidence of predation;
 - determination of whether changes in flows result in breeding in newly inundated margins, or use of old sites that are now deeper;
 - assessments of whether the new breeding sites connect with the summer lower flow channel, remain as disconnected off channel water bodies, or dry up entirely;
 - return visits to breeding sites and adjacent low flow areas that may be tadpole rearing habitat to assess survival of tadpoles to metamorphosis;
 - estimates of the number of adults at the onset of breeding at each breeding site;
 - monitoring of the time from egg deposition to hatching;

- monitoring of tadpole numbers and life stage development;
 - monitoring of water temperatures annually in March through May to determine the temperature at which breeding initiates and terminates (to be coordinated with the recommended temperature and DO monitoring plan);
 - an assessment of whether the high tadpole mortality observed in 2002 was due to a water quality factor or predation;
 - taking advantage of unplanned spring or summer high flow events, to the extent possible, to determine any correlation between these spill events and changes in tadpole or metamorph numbers from years when these events did not occur;
 - taking advantage of the receding spring hydrograph to determine flow vectors at known breeding sites and their changes with flows; and
 - reporting procedures for survey and monitoring results.
17. Develop within 1 year of license issuance a monitoring plan for western pond turtle in consultation with, at a minimum, the FS, FWS, and CDFG; consider monitoring at sites where turtles were observed during pre-licensing studies (Spring Rivers, 2001b), e.g., near Camp Nine Flat, Malinda Gulch, Canyon Creek, Blackberry Creek, Big Bend Hot Springs, and the two sites just downstream of the hot springs.
18. Consult with the FS prior to undertaking any actions that would affect FS sensitive species or their habitat, to determine whether preparation of a Biological Evaluation is necessary; identify best management practices that are consistent with the FS standards and guidelines; and develop any specific protection measures that should be implemented.
19. Develop and implement a plan for the protection of valley elderberry longhorn beetle (VELB), including pre-construction surveys, where needed, and training and education for crews that are responsible for management (operation and maintenance) of the project. Include in the plan provisions for ensuring that measures identified in the plan (e.g., flagging and protecting elderberry shrubs with stems over 1 inch in diameter) are consistent with the current FWS guidelines (if the guidelines issued in 1999 are updated).

20. Consult with the FS, FWS, and CDFG in the development of mapping of suitable habitat for northern spotted owl that could be affected by project operations. Identify during this consultation the process that would be used to determine if field surveys or protection measures might be required. PG&E's survey responsibilities in general should be confined to areas within 0.25 miles of project activity sites (or an alternative buffer determined during agency consultation) where potential disturbance of owls is a concern, unless specific activities (e.g., those that may generate noise beyond the designated buffer) that would require adjustment of this survey limit, are identified during agency consultation. File a plan with the Commission within 1 year of license issuance that identifies the area to be mapped, and subject to potential survey, the process that would be used to determine when field surveys and assessment of potential protective measures would be needed, and a schedule for submitting maps of suitable northern spotted owl habitat within the defined study area to the Commission.
21. Prepare a revised IBEMP and update every 5 years. Include local communities, commercial operators (e.g., angling guides, outfitters, rafting companies), and recreational groups in the consultation process for the proposed IBEMP update, since measures to protect bald eagles would affect their activities and businesses and would require their cooperation. Include the Tribe in the consultation process, due to the cultural importance of the bald eagle. Include a mechanism for regular meetings with plan cooperators to identify any changes to the plan that may be needed. The IBEMP should focus on:
- protection of habitat to ensure that suitable nest, roost, and perch trees (and stands) would be available through the license period; and
 - identification of specific measures that would effectively minimize disturbance to both nesting and wintering bald eagles (existing measures such as boating speed restrictions in upper Lake Britton, would likely need to be continued; additional measures may also be needed to respond to changes in bald eagle nest locations; implementation of scheduled whitewater releases could disturb bald eagles and would need to be carefully managed in order to minimize the risk of adverse effects).
22. Develop a biological monitoring and adaptive management plan within 1 year of license issuance, in consultation with the FS, CDFG, FWS, SWRCB, CDPR, and the Tribe, at a minimum, that establishes the framework for evaluating the effects of environmental measures on fish and wildlife, as defined by the monitoring specified in previously described proposed and recommended plans, including defining the resource goals and objectives that are expected to be achieved under the conditions

of a new license. The plan would also define the process that would be used to determine whether or not there is a need to adjust measures that may be specified in a new license or implement new measures. The plan would also define consultation procedures that would be taken prior to undertaking any actions that would affect FS sensitive species or their habitat, to determine whether preparation of a Biological Evaluation would be necessary (see item 18). The plan would be revised, as needed, every 4 years and filed with the Commission with a summary of monitoring results and description of any changes in environmental measures that are proposed, and the basis for the changes.

23. Develop a comprehensive recreation management plan, including site drawings and implementation schedule. Include the following entities in the consultation associated with the development of PG&E's proposed recreation management plan: the FS, FWS, NPS, CDPR, CDFG, SWRCB, Shasta County, the Tribe, and the Hat Creek TAC, and submit the plan to the Commission for approval within 1 year of license issuance. The plan would include the following components and considerations:
- Identification of recreational use management objectives for the project area, specifically for the upper and lower Lake Britton area and the Pit River Canyon reaches, and consideration of FS ROS objectives associated with these areas, as appropriate, in developing these objectives.
 - Provision of a summary of the existing project-related facilities, including type, location, owner, and entity responsible for the management of the facilities.
 - Development of recreational-use capacity triggers to help assess the need for future development of additional facilities, such as an expanded campground or day-use facility at Lake Britton, or a new primitive campground in the Pit River Canyon area.
 - The results of PG&E's proposed assessment of whether a primitive campground can be developed along the Pit 5 bypassed reach, including: (a) potential sites; (b) the estimated cost of developing a site; (c) documentation of consultation with CDPR, FWS, CDFG, and representatives of the community of Big Bend; (d) a recommendation regarding whether the site should be developed; and (e), if so, a schedule or capacity trigger that would be used to initiate site development.

- Identification of measures to provide new and upgraded existing project-related recreational facilities and trails within the project area. Incorporate measures to address the need for sanitation facilities and trash receptacles. Provide preliminary designs, implementation schedule, and estimated costs for these facilities. Facility design should consider providing accessibility to persons with disabilities, as appropriate, and be consistent with the recreational-use management objectives.
- Assessment of the potential effects of the proposed facilities on the project area's sensitive resources, and development of appropriate site-specific mitigation measures, if needed.
- Coordination of the development of the plan and facility upgrades with development with the road and facilities management plan, particularly the off-road vehicle (ORV) management component of that plan, the vegetation management plan, the IBEMP, and the HPMP for the project.
- Identification of measures to maintain and manage the existing and new project-related recreational facilities and trails within the project area, including identifying the entity responsible for managing the facility, and recreational site vegetation management measures for the existing and proposed recreational access areas within the project boundary.
- Provision of documentation of consultation conducted in the development of the recreation management plan, including copies of any correspondence with the consulted parties, summary of key meetings conducted with the consulted parties in the development of the plan, and PG&E's response to comments on the plan.
- Inclusion in PG&E's proposed recreation management plan the following measures that pertain to Lake Britton beyond those proposed by PG&E (in some instances, the measures are proposed by PG&E, but we provide additional details):
 - (a) maintain recreational access and provide improvements at the Hat Creek fish barrier area or at an alternate location downstream of the fish barrier, including: (1) an assessment of measures to provide parking, a car-top boat launch area, and an accessible trail for fishing access to the river (select the location for the provision of these facilities considering potential effects on the areas sensitive resources); (2) continuing to provide signage restricting access to sensitive areas to help protect sensitive resource areas; and (3) an

assessment of whether public access to this area should be restricted to foot traffic by gating the access road at Highway 299 for the protection of sensitive resources;

(b) implementation of the following improvements at the North Shore Campground: (1) institute measures to create and maintain beach areas and to reduce shoreline erosion due to beach use; (2) designate swimming areas to separate swimming and boat mooring and beaching; (3) provide directional signage, as appropriate; (4) evaluate the need for and feasibility of constructing additional road pullouts on the North Shore Campground access road; assess measures to provide 10 to 15 parking spaces for day use only near the boat launch or east bluff beach access areas; (5) provide firewood to campground users (either for sale or free of charge); and (6) install flush toilets and showers;

(c) provide additional beach day-use capacity around Lake Britton that would increase the existing capacity by 100 people at one time (PAOT); concentrate on enhancing existing sites or disturbed areas before any new locations are considered; day use areas would include the following: (1) regularly maintained beach sand, if needed; (2) access to the shore designed to minimize erosion; (3) restrooms on site or nearby; (4) access by road or boat; (5) designated parking, if access is by road; (6) trash collection; and (7) regular monitoring by a host or PG&E employee (to be coordinated with PG&E's proposed measure 17);

(d) provide 25 percent more public overnight developed camping units over the life of the license (an increase of 39 sites); at least half of the capacity would be added during the first 10 years from license issuance and the balance within 15 years of license issuance; additions to capacity should be within the project boundary or situated to enhance public access to project lands and waters; new capacity would emphasize expansion of existing sites and use areas over the development of new sites and use areas (to be coordinated with PG&E's proposed measure 17);

(e) establish a reservoir water surface zoning plan that documents existing speed zones and displays recommended changes (to be coordinated with PG&E's proposed measure 17); and

(f) provide measures to enhance the existing Jamo Point boat launch area, including: (1) designating parking spaces for vehicles with trailers; (2) providing a picnic table between the restroom and shoreline; (3) developing a

potable water source at the Jamo Point boat launch or Pines picnic area, including an assessment of whether this source should be available on a year-round basis, to help improve the recreational user experience at this area; and (4) providing personnel at the Jamo Point boat launch area and Pines picnic area to provide trash removal and maintenance of restrooms during weekends from Labor Day through the end of September.

Include in PG&E's proposed recreation management plan the following measures that pertain to the Pit River Canyon beyond those proposed by PG&E (in some instances, the measures are proposed by PG&E, but we provide additional details):

(a) if the Shasta County ordinance prohibiting boating on the Pit 4 reservoir is modified to allow public use by non-gasoline powered boats, address the most appropriate location for this access;

(b) provide a day-use access area at the Pit 5 or Tunnel reservoirs;

(c) improve and provide adequate parking at Talus Siren by removing road debris piles on the south side of the road, and implement the following trail improvements to enhance access to the bypassed reaches at Powder Spur, Delucci Ridge, Rock Creek, Malinda Gulch, and Oak Flat in such a manner that is consistent with the FS ROS objectives for this area, Roaded Natural and Semi-Primitive Motorized: (1) erosion and sedimentation control measures; (2) stabilization of existing erosion sites; (3) provide signage to designate trails; (4) improve and provide adequate parking at each trailhead; (5) provide trailhead trash receptacles, as appropriate; and (6) provide sanitation facilities, as appropriate;

(d) develop spoil pile 4D, near the Pit 4 dam, into a scenic canyon overlook vista and include in the design: (1) parking areas; (2) pathways; (3) interpretive signage, and (4) safety barriers at the edge of the steep slope, as needed; coordinate the design with the spoil pile management plan;

(e) address the following issues that pertain to dispersed use along the project bypassed reaches: (1) fire prevention; (2) sanitation; (3) parking; (4) unintended expansion of the area influenced by recreational use (site creep); (5) crowding; and (6) length of stay limits; although we expect PG&E to address these issues, we do not necessarily conclude that PG&E should be responsible for solving them, unless there is a clear connection to project purposes;

(f) provide recreation-related improvements at Ruling Creek to include: (1) a vault toilet; (2) trash receptacles; (3) provisions to either remove or incorporate into the site design the piles of road debris; (4) realignment of the access road away from the river; (5) stabilization of riverbank erosion associated with the old roadbed; (6) designated camping and parking locations; (7) installation of metal fire rings; and (8) improvements of pedestrian access to the river; and

(g) provide whitewater boater put in and take out sites at each of the three bypassed reaches, including: (1) on the Pit 3 reach, improve egress from the river in the vicinity of the powerhouse; (2) on the Pit 4 reach, improve egress from the river in the vicinity of the existing informal take-out at the Pit 4 powerhouse, grade the parking lot, and provide a vault toilet; and (3) on the Pit 5 reach, improve ingress to the river by improving access and providing additional parking in the vicinity of the existing informal put-in near Trailer Road, and at the take-out in the vicinity of the existing informal access just upstream of the Pit 5 powerhouse, grade and gravel the parking area and provide a vault toilet.

24. Develop a recreation monitoring plan to assess levels of recreation use, need for additional resource protection measures, and need for facility expansion. The plan would include the following:
- a definition of recreation monitoring indicators, such as recreational facility occupancy rates, dispersed site occupancy rates, perceived crowding, reservoir boating use levels, river shoreline use densities, number and area of user created dispersed areas, litter and debris, recreational facility condition, vandalism, and effects on cultural resources, bald eagle, aquatic habitat, and water quality;
 - standards that would help define the minimum acceptable condition for each indicator;
 - identification of the frequency the indicators would be monitored and provisions for stakeholders to meet to discuss monitoring results;
 - identification of measures to apply the results of the monitoring to help determine if recreational use should be limited due to effects on resources or if recreational use should be allowed to grow and additional facilities constructed to accommodate growth in recreational use; these measures

should coincide with the recreational use capacity triggers to help assess the need for future development of additional facilities;

- identification of measures to provide recreational use data for the year prior to the submittal of the summary report (i.e., every 6 years) by activity and by facility location and information related to boating use with a description of the methodology used to collect the data;
 - the process for identification of unforeseen management factors or issues, based on the results of the monitoring, that were not addressed in the original recreation management plan, and measures to address these issues;
 - submittal of a summary report to the Commission every 6 years (coinciding with the FERC Form 80 submittal) to include the recreation monitoring results, documentation of consultation, and a summary of any planned recreational facility improvement measures or resources protection mitigation measures associated with the recreational facilities, including schedule, party responsible for funding and implementing the measures, estimated costs for implementation, and entity responsible for the long-term maintenance and management of the planned recreational facilities or mitigation measures; and
 - documentation of consultation conducted in the development of the recreation monitoring plan, including copies of any correspondence with the consulted parties, summary of key meetings conducted with the consulted parties in the development of the plan, and licensee's response to comments on the plan.
25. Develop an interpretive and education (I&E) plan for Lake Britton and the Pit River Canyon area in consultation with the FS, CDPR, NPS, FWS, CDFG, and the Tribe, and submit the plan to the Commission within 2 years of license issuance; include in the plan the following components:
- information to be publicized about the Pit River Hydroelectric System; Native American history; local history; project area aquatic, botanical, and wildlife resources;
 - resource management actions planned and under way;
 - appropriate recreation behavior (leave-no-trace practices, fire safety, and recreation use impacts);

- maps (indicating roads, parking areas, developments, and trails);
 - public safety information, such as safe boating and angling practices on project waters;
 - specific measures that would be used to provide interpretive materials (e.g., brochures and location of signage, as appropriate) to educate the public about the above topics; and
 - documentation of consultation conducted in the development of the I&E plan, including copies of any correspondence with the consulted parties, summary of key meetings conducted with the consulted parties in the development of the plan, and PG&E's response to comments on the plan.
26. Develop a plan within 6 months of license issuance for providing annual recreation streamflow releases in the Pit 5 reach suitable for whitewater boating, in consultation with the SWRCB, CDFG, FWS, NPS, CDPR, the Tribe, and AWA, at a minimum, in accordance with the provisions in the section of the PRCT agreement entitled "Recreation Streamflow Releases." The plan would provide details on the collection of up to 5 years of ecological monitoring, specify details of a recreation streamflow release schedule, provide for environmental and boater-use monitoring during actual releases, and describe an adaptive management program that would provide for potential adjustments to the number of releases based on the results of the monitoring. The plan would specify a decision point, where the results of baseline monitoring would be assessed by the consulted parties and a final recommendation, with the basis for the recommendation, made to the Commission regarding whether or not scheduled recreation streamflow releases should be implemented. If scheduled releases are recommended, include the specific measures that would be implemented to ensure the protection of sensitive resources and the safety of boaters and other river users (i.e., swimmers and anglers) during the releases; following Commission approval, the releases would be implemented.
27. Develop a road and facilities management plan within 1 year of license issuance, in consultation with the FS, FWS, the Tribe, the Hat Creek TAC, and SWRCB, at a minimum, that includes the following:
- an inventory and map of existing road segments and parking areas within the project boundary, both FS classified and unclassified, including: (1) the purpose of each road and parking areas, relative to project purposes; (2) season of operation; (3) designated FS road management objectives (RMO)

(if applicable); (4) drainage crossings or bridges and culverts and verification of ability to pass water and debris during a 100-year storm event; (5) location of road watering sources; and (6) disposal sites for surplus material such as rocks, brush, and spoil piles; this inventory would serve to identify those roads that serve project purposes and thus should be the responsibility of PG&E to ensure that they are maintained in a manner consistent with current criteria and consistent with the FS RMOs; of the roads listed in table 46, we have not been able to identify a nexus to project purposes based on the information provided for the following roads: bald eagle management area road; Pit 4 reservoir spurs; Big Pine Deer Camp Road; Deep Creek Campground Road; and Gravel Bar Road, and do not recommend that these roads be considered project roads, unless evidence to the contrary is presented;

- provisions to restrict vehicular access to designated roadways and prohibit off road activities within the project area including: (1) grading and adding red cinder to limit rutting and muddiness; (2) revegetating and bouldering ORV-created roads; (3) consultation to determine which roads should be closed; and (4) development of an ORV management plan to protect sensitive cultural and terrestrial resources that includes: (a) identification of damaged areas; (b) identification of rehabilitation needs for damaged areas; (c) time frames for seasonal road closures; (d) restrictions to protect bald eagles, cultural resources, and sensitive habitats; and (e) measures to address access roads near the Hat Creek fish barrier dam to assess the need for vehicular access roads and ways to balance access with protection of sensitive areas; development of the ORV management plan would be coordinated with the implementation of the project's HPMP;
- provisions to consult with the FS, the Tribe, and California Department of Transportation (CalTrans), at a minimum, to develop road maintenance standards and specific road rehabilitation needs;
- provisions to consult with the FS, CalTrans, and Shasta County to develop interim measures to address the current condition of the intersection of Jamo Point/Pines picnic area access road with State Route 89;
- establishment of designated areas for disposal of rock and soil from road management and a description of the types of materials allowed to be disposed of in the designated areas and how organic materials would be treated;

- a road rehabilitation schedule to bring existing project-related roads and associated facilities (i.e., culverts, gates, bridges, crossings, cribwalls) into compliance with applicable standards that achieve the FS's designated RMOs (for roads on National Forest System Lands);
- specification of applicable limited operating periods for road rehabilitation and maintenance that would protect sensitive species of wildlife;
- measures to address existing road and parking area rehabilitation needs to bring existing project roads up to current public safety levels; general road rehabilitation needs would include items such as: (1) gates and signage for road closures as specified in the latest edition of the *Manual of Uniform Traffic Control Devices*; (2) measures to prevent introduction of noxious weeds at construction sites; (3) implementation of the FS's *Best Management Practices - Water Quality Management for Forest System Lands in California*; (4) bridge inspections; (5) installation of vehicle control measures to protect against erosion; and (6) regular maintenance of roadways including replacing faded signs, clearing vegetation to provide adequate sight distances, and repairing or replacing damaged culverts. Specific rehabilitation needs should include upgrades developed in consultation with the above entities;
- where dust from project roads has been identified as a problem (e.g., Hagan Flat Road from Tunnel Reservoir to the Pit 5 dam), address dust control measures that are proposed for implementation;
- measures to monitor future use and condition of the project area road segments and parking areas, including traffic-use surveys every 6 years at designated sites, time frames, and frequencies; and conduct future project-related road and parking area rehabilitation, as necessary, based on the results of this monitoring, in consultation with the FS, FWS, the Tribe, the Hat Creek TAC, and SWRCB;
- measures to monitor and address landslide and soil erosion activity related to project roads and parking areas;
- a water quality monitoring plan that includes runoff management;
- a traffic safety plan;

- an adaptive management component to allow changes to the plan should use or applicable standards necessitate;
 - provisions to submit a summary report to the Commission every 6 years to include the road survey results, documentation of consultation, and a summary of planned road segment and parking area rehabilitation measures, including schedule, party responsible for funding and implementing the measures, and estimated costs for implementation;
 - an implementation schedule and estimated costs for road rehabilitation and ORV management measures that would be conducted during the period that precedes the submittal of the first summary report specified in the above measure; and
 - documentation of consultation conducted in the development of the road management and maintenance plan, including copies of any correspondence with the consulted parties and licensee's response to comments on the plan.
28. Develop a plan, in consultation with the FS and the Tribe, within 1 year of license issuance, for providing full time patrol of the project for purposes of resource protection that provides for routine and regular physical inspections of affected lands, project facilities, and structures including implemented protection, mitigation, and enhancement measures and the provisions of the HPMP. The plan would also include a description of reporting responsibilities, including observed violations of laws, and communications with law enforcement agencies as well as required documentation of inspections.
29. Develop a fire management and response plan for project lands within 6 months of license issuance in consultation with the California Department of Forestry and Fire Protection, local fire departments, such as Burney and Big Bend, and the FS that is consistent with existing fire management strategies on lands within and adjacent to the project boundary. Include in the fire management and response plan the following: (a) how fire danger and public safety associated with project induced recreation, including fire danger associated with dispersed camping, existing and proposed developed recreation sites, trails, and vehicular access would be addressed; (b) measures to increase public awareness about fire danger, including signs and brochures; (c) an analysis of fire prevention needs including equipment and personnel availability and fire patrols; (d) a list of the location of available fire prevention equipment and the location and availability of fire prevention personnel; (e) provisions for reporting any project related fires to the FS as soon as practicable; (f) how fire control and extinguishing would be addressed; and (g) how

PG&E would ensure that fire prevention measures would meet water quality best management practices (BMPs). The fire management and response plan would be coordinated with the recommended vegetation management plan, including measures for vegetation management to control the potential fuel supply for fires, and the I&E plan.

30. Develop a visual management plan (VMP) in consultation with the FS and CDPR within 1 year of license issuance that would: (a) specify practical methods that would be implemented to reduce visual effects of existing facilities during regular maintenance and upgrading; (b) specify practical methods that would be implemented to minimize visual effects of proposed and recommended new facilities; and (c) specify practical methods that would be implemented for removal of project-related debris from project-influenced waters.

31. Develop a signage plan in consultation with the FS, CDPR, and CalTrans, at a minimum, within 1 year of license issuance that specifies the location, design, size, color, and message for the following types of signs: (a) information and education; (b) fire prevention; (c) regulatory and warning; (d) project license; (e) road; (f) recreation; (g) directional; and (h) safety. Address in the plan maintenance standards, so that all signs are maintained in a neat and presentable condition, and provisions to ensure sign format is consistent throughout the project area.

32. Develop a land and habitat management plan (LHMP) for project lands, that includes previously described plans to facilitate cross-referencing the many inter-related component plans and help ensure that management of project resources is coordinated throughout the term of the license. The LHMP would be filed for Commission approval within 2 years of license issuance. The LHMP would include the following:
 - overview and discussion of general land management measures within the project area (this section would include a discussion of key land management objectives, and a description of how coordination of the various components of the LHMP would be accomplished);
 - erosion and sedimentation control plan;
 - spoil pile management plan;
 - biological monitoring and adaptive management plan that includes the following components: the fish and invertebrate monitoring plan; foothill yellow-legged frog monitoring plan; western pond turtle monitoring plan;

IBEMP; BCMP; wildlife management plan (which specifies monitoring and mitigation to protect sensitive wildlife species proposed and recommended elsewhere); and vegetation and noxious weed management plan;

- HPMP (portions that do not include sensitive materials);
- recreation management plan;
- project patrol plan;
- road and facilities management plan;
- sign plan;
- fire management and response plan; and
- VMP.

Each chapter would consist of the specified plan, with cross-references to related plans to avoid redundancy, as appropriate, and would include a description of the proposed management and enhancement measures, an implementation schedule, monitoring and maintenance measures, and documentation of consultation conducted in the development of the plan.

33. Modify the project boundary to include the following project-related features that are currently partially not within the existing project boundary:
- the access road from State Highway 299 to the gasoline parking area and car-top boat launch at Lake Britton;
 - a single access road from State Highway 299 to the south side of the Hat Creek barrier dam, and any recommended facility at this location that may not be in the existing project boundary;
 - any portion of Dusty Campground not within the existing project boundary;
 - any portion of the access road to Jamo Point boat launch area and the Pines picnic area, and the facilities themselves, that are not within the existing project boundary;

- any portion of the access road to the North Shore Campground that is not within the existing project boundary;
- that portion of the Powder Spur, Delucci Ridge, Rock Creek, Malinda Gulch, and Oak Creek trails, and associated parking areas, from the road to the waters edge;
- the portion of the Pit 3 surge tank road not within the existing project boundary;
- any portion of River Road not in the existing project boundary;
- the spoil pile 4D road and the area proposed for development as a canyon scenic overlook;
- the Ruling Creek dispersed camping area (with sufficient land to accommodate proposed new enhancements);
- the access road to the Pit 4 gaging station (USGS gage No. 11362500) and the station itself;
- the land on which all functional portions of the Pit 5 gaging station (USGS gaging No. 11363000) lies;
- the proposed whitewater boater put-in site for the Pit 5 reach at the Trailer dispersed use area, including the access road and parking facilities;
- any portion of the Miners Creek spoil pile not in the existing project boundary;
- extend the project boundary at the Bush Bar site to the waters edge, to include the proposed whitewater boater take-out site; and
- any recommended recreational facility that has not yet been designed should be within the existing project boundary, or the boundary modified to include the functional elements of the facility.

Implementation of these 33 measures, in addition to the 21 measures proposed by PG&E, would protect and enhance water quality and aquatic, terrestrial, recreational, and cultural resources. We present our rationale for some of our recommended measures in the following sections.

5.2.1.1 Water Resource Measures

Water Quality Monitoring

Our review of PG&E's water quality data, detailed in section 3.3.1, *Water Resources*, indicates that with the exception of occasional DO criteria violations, mostly associated with the deep waters of Lake Britton, there is no evidence of project-related water quality problems for most parameters. However, given the importance of the wild trout fishery in the bypassed reaches and that sometimes water temperature model predictions about the consequences of varying flow regimes may not reflect actual conditions, we consider it important to establish a water temperature monitoring plan. Therefore, we recommend a plan that focuses on monitoring water temperature at key locations throughout project-influenced waters, with periodic spot DO measurements and temperature and DO profiles near the Pit 3 dam during the warmest time of the year (typically July and August) to confirm that project operations under the conditions of a new license meet water quality standards.

In response to our similar recommendation in the draft EIS, PG&E now agrees to develop and implement a temperature and DO monitoring plan. Our recommended plan would also require PG&E to identify potential operational measures that could be implemented in the event that water temperatures approached the maximum acceptable values as a result of project operations and circumstances that would trigger implementation of such measures. In its comments on the draft EIS, PG&E indicated that it has limited ability to manage water temperature in the project reaches and requested clarification of our intent when we specified that PG&E should develop a water temperature monitoring and maintenance plan. We recognize that PG&E has limited ability to manage water temperature, but we consider it appropriate for any measures to decrease water temperature when it approaches suboptimal conditions to be identified, along with criteria for the implementation of the measure. Such measures could include increasing flows through the powerhouses (and thus decreasing the spill of warmer surface water) or from low level release gates during the summer, if the prevailing water temperature approaches 20 degrees C. The FS final 4(e) condition No. 22 is consistent with our recommendation. We estimate the annualized cost of our recommended plan would be about \$8,290, which assumes that implementation of remedial measures would be minimal.

We find that it would also be appropriate to monitor water quality in association with the implementation of other plans that we recommend. For example, during the stabilization of project spoil piles, it would be appropriate to monitor adjacent waters for indicators of erosion, such as turbidity or suspended solids to ensure that best management practices to control erosion and sedimentation are operating as intended. Similarly, construction of new or enhanced recreational facilities and rehabilitation of project roads

adjacent to project waters should include water quality monitoring to ensure measures to protect water quality, which would be incorporated into the specific plan for the proposed work, are functioning as anticipated. We consider it appropriate to specify the details of any best management practices to protect water quality, as well as any specific water quality monitoring that would be implemented to verify that water quality is not being compromised by the specific activity, in the specific plans rather than in a broad, project-wide water quality monitoring plan.

In its Section 10(j) recommendation, Interior recommends that PG&E implement a water quality monitoring plan in all project waters that would ensure that project operations were in compliance with applicable water quality standards for temperature, DO, BOD, turbidity, conductivity, and pH. Based on Interior's initial description of this measure, we estimated in the draft EIS that this measure would decrease the net annual benefit of the project by about \$31,580 more than our recommended water temperature monitoring plan. We conclude that there is no evidence that routine project operations influence BOD, turbidity, conductivity, and pH, and thus there is no basis to require PG&E to monitor for such parameters on a project-wide level. As noted above, we agree that site specific monitoring for certain parameters is warranted to ensure that protective measures that are designed to protect water quality are operating as expected, but such monitoring is most appropriately included in the site specific plan that would require such best management practices.

In its biological opinion pertaining to measures FWS considers necessary to protect bald eagles from continued project operations, the FWS expanded the scope of its recommendation to include a water quality management plan. The plan would entail monitoring for a variety of parameters in water, sediment, invertebrates, and fish (with appropriate temporal, spatial, and taxonomic composition to adequately represent conditions) to ensure that project operations are in compliance with applicable state water quality standards (including an assessment of nutrient loading, methylmercury production locations, and ecosystem pathways for mercury bioaccumulation). FWS also recommends a water temperature monitoring plan to ensure that the flow regime under a new license is consistent with the designated beneficial uses of the project waters, which include both warm and coldwater fisheries. The cost of the extensive water quality monitoring program recommended by Interior is difficult to estimate, but we conclude that it could easily decrease the net annual benefit of the project by at least \$106,580 beyond the cost of implementing our recommended temperature and DO monitoring plan. Although nutrients and mercury are present in project waters, we see no evidence that this presence is related to project operations. Consequently, it is unclear how project operations could be changed in response to the monitoring results. We therefore cannot recommend that the Commission include as a new license conditions the extensive and costly water quality

management plan recommended by FWS, because there would be little if any environmental benefit associated with implementing this measure.

Erosion and Sediment Control

Our approach to controlling erosion and sedimentation is to identify existing potential erosion sites and implement site-specific measures (see section 3.3.1, *Water Resources*). PG&E's proposed spoil pile management plan, road management plan, and HPMP would enable such site-specific measures to be identified during agency consultation and addressed. The design of our recommended new or enhanced recreational facilities, included in a recreation management plan, would also include site-specific erosion and sedimentation control measures that would be in place prior to any project-related ground-disturbing activities. However, we can envision circumstances where eroding sites caused from project operations (e.g., fluctuating flows and reservoir water levels, dispersed recreational use) may not be addressed by any of the other designated plans (i.e., if the sites are not associated with a spoil pile, recreational site, project road, or known cultural site). To address such sites, we recommend that PG&E develop an erosion and sedimentation control plan. Since the number of sites that may need to be addressed would be minimal, the cost of developing and implementing this plan should be small, about \$2,320 annually, and we conclude the increased protection to water quality that such a plan would afford is warranted.

The FS, in its final 4(e) condition No. 16, specifies procedures that it expects to be taken in the event that the need for emergency erosion and sedimentation control becomes evident during the term of a new license. We agree with the FS that having procedures in place that specify actions that should occur during unforeseen emergencies is proactive and should be included in our recommended erosion and sedimentation control plan. We do not expect this to add substantively to the cost of our recommendation. If unforeseen project-related erosion should occur, we would expect PG&E to stabilize such erosion, and the cost of doing so would be a component of PG&E's O&M costs.

Spoil Pile Management

PG&E proposes to develop a remediation plan for the Miners Creek spoil pile, as well as a management and maintenance plan for other project-related spoil piles (see section 3.3.1, *Water Resources*). Implementation of these two plans should stabilize eroding slopes, some of which are adjacent to the Pit River, thus minimizing the potential for sedimentation, and enable other water quality protection measures identified in the plans to be established. We consider PG&E's proposed plans to be similar enough that they could be combined into a single spoil pile management plan. Some sites, such as the Miner's Creek spoil pile, are in need of more extensive remedial measures than others, but

many of the concepts of stabilization, management, and maintenance would apply to all PG&E generated spoil piles. In addition, our recommended agency consultation during the development of this plan would provide a reasonable forum to address whether consideration should be given to stabilizing the Pit River bank across from spoil pile 4D. Although this actively eroding site may be related to the placement of spoil pile 4D when the project was constructed, the environmental effects associated with stabilizing this site are unknown. Bank stabilization would likely entail instream construction during low flow conditions and creation of access for heavy equipment. This site also may provide a source of spawning gravel for the important trout fishery in the Pit 4 bypassed reach. We estimate the cost of implementing the spoil pile management plan would reduce the annual net benefit of the project by about \$582,260. Although this represents a substantial cost, we conclude that the environmental benefits (including enhanced water quality, aquatic habitat, and aesthetic conditions) associated with stabilizing and restoring these sites is worth the cost.

Provisions for Dredging in Project Waters

PG&E agreed with our recommendation in the draft EIS that should dredging of project waters be needed during the term of a new license, a dredging plan should be developed in consultation with the FS, FWS, CDFG, and SWRCB. In response to comments received on the draft EIS, we added the EPA and the Corps to the agencies that would be consulted during the preparation of any such dredging plan, because of their potential federal permitting responsibilities. We have added details regarding what we expect to be included in a dredging plan, should the need for such a plan arise. Because development of this plan is contingent on a need for dredging, and such a need has not been identified in the foreseeable future, this recommendation is not likely to result in any decrease in the net annual benefit for this project.

Streamflow and Reservoir Level Monitoring

In the PRCT agreement, PG&E proposes to measure flows in the Pit 3 bypassed reach by using the sum of spillway flow calculated from hourly reservoir elevation to account for spill volume and the hourly mean release from a calibrated release valve at the dam or by other means acceptable to the USGS. Flows in the Pit 4 and 5 bypassed reaches would continue to be measured by existing USGS gages. Constructing a USGS-type gage that directly measures flow in the Pit 3 bypassed reach would entail building an access road down a very steep slope and most likely a weir across the river channel to create an area of relatively laminar flow needed to establish an accurate stage discharge relationship for direct discharge measurement (see section 3.3.1, *Water Resources*). We conclude that the environmental effects of constructing and operating such a gage make the gage unwarranted. We agree with PG&E's and the PRCT's proposed indirect approach to

measuring flow in the Pit 3 bypassed reach, which if properly designed, should provide a sufficient level of accuracy to enable the Commission to verify compliance with the flow regime that is specified in a new license for this project.

The PRCT agreement implies that consultation with the USGS would occur in developing the flow monitoring scheme at the Pit 3 dam, but details of what would be included in any flow and Lake Britton water level monitoring scheme are not provided. We consider it important to document the flow monitoring protocols that would be used during the term of a new license in a plan, including methods and frequency of calibration of all flow and water level measuring devices, the frequency of data downloads, and the entities responsible for operation, maintenance, and quality assurance of the flow monitoring equipment. We agree that the USGS has sufficient flow measurement expertise to ensure that practical and accurate measurement of project flows is achieved. We also consider it appropriate that those resource agencies that have a vested interest in project flow regimes, the FS, FWS, and CDFG, to be consulted during the flow and water level monitoring plan preparation so that their input is considered and they are afforded an opportunity to concur with the monitoring scheme specified in the plan.

PG&E also commits to make a good faith effort to provide flows to the bypassed reaches where facility modifications are needed to release flows specified in the PRCT agreement. No indication is provided as to which facilities may need to be modified to accommodate the PRCT agreement flows, and thus would be subject to interim "good faith" flow release provisions. We consider it important to establish whether facility modifications would be needed and, if so, at which dam, the cost of such facilities, and the advantages that the new facilities would provide over using the capabilities of the existing facilities. We conclude that such details should be provided in a streamflow and water level monitoring plan.

We estimate that developing and implementing a flow and reservoir level monitoring plan would decrease the annual net benefit of the project by about \$17,900. We provide additional details beyond what is specified by PG&E of what we expect to be included in a flow and water level monitoring plan. We consider our details to be a formalization of the documentation of specific steps that PG&E would need to take in order to meet the flow regime specified in the PRCT agreement. Therefore, we consider the cost ramifications of our recommended details to be inconsequential.

5.2.1.2 Aquatic Resource Measures

Minimum Flows

The minimum flow regime now proposed by PG&E and specified in the PRCT agreement allows for variable releases that range from 280 to 450 cfs and are dependent on the specific reach, month and, to a certain extent, the timing of when spill events start and stop in each specific bypassed reach. During dry water years, spill at project dams may not occur at all (see table 27 in section 3.3.2, *Aquatic Resources*). This regime mimics the variability in flow that would occur with a natural hydrograph. The highest flows would typically occur during late winter and early spring and the lowest flows would occur during late summer and early fall. The minimum flow regime specified in the PRCT agreement would enhance aquatic habitat for a number of key species and life stages, while retaining the ability of anglers to effectively fish in all three project bypassed reaches.

We estimate that implementing the PRCT minimum flow regime would decrease the net benefit of the project by about \$6,721,140. Most of this cost would be associated with the loss of 149,748,000 kWh of energy, although we estimate that it may take over \$8 million in capital costs to enable the release of the proposed minimum flow regime from all three project dams. In the draft EIS, we recommended PG&E's originally proposed flow regime, which would have decreased the net annual benefit of the project by about \$2.7 million. However, this was in sharp contrast to the flow regimes originally recommended by the FS, Interior, and CDFG, that would have decreased the net annual benefit of the project by \$8.7 million, \$13.8 million, or \$17.6 million, respectively. We consider the minimum flow regime negotiated by the PRCT to be a reasonable compromise between the original divergent flow proposals and recommendations. An advantage of the PRCT's flow shaping approach that is not evident in the lost revenue and generation values is that during the period of peak energy demand, which is typically in July and August, the minimum flow requirements are near their lowest levels. Consequently, more energy would be available at those times than would be if a single higher year-round minimum flow regime was to be implemented in each of the bypassed reaches. The PRCT minimum flow regime supersedes all previously proposed and recommended minimum flow regimes. We consider the environmental benefits of implementing this flow regime to be worth its cost.

Fish and Aquatic Invertebrate Monitoring

Many sensitive species of aquatic invertebrates, including molluscs, and fish, including rainbow trout, hardhead, and several species of sculpin, inhabit project-influenced waters. In addition, CDFG management objectives for the bypassed reaches are defined in terms of angler catch statistics, so angler interviews and creel census data are needed to determine if management objectives are being met. PG&E, the resource agencies, and

Commission staff all are in agreement that fish, aquatic invertebrates, and angler success should be monitored during the term of a new license to quantify the response of the aquatic community to a new flow regime that would be specified in a new license for this project. The primary issue is the frequency of monitoring. Interior, in its 10(j) recommendations specified two conflicting monitoring frequencies, once every 4 years and then at 4 year intervals thereafter, and once every 8 years, and then at 4 year intervals thereafter. CDFG was a bit more flexible, with monitoring occurring every 3 to 5 years. The FS would require monitoring at 3 year intervals for the first 10 years from license issuance and every 5 years thereafter. In our draft EIS, we recommended monitoring every year for the first 4 years from license issuance, and then at years 8, 12, 16, 20, and 24 from license issuance. In comments pertaining to the draft EIS and during our August 28, 2003, Section 10(j)/FS clarification meeting, PG&E, Interior, and CDFG all supported our proposed monitoring frequency. However, in its final 4(e) condition No. 23, the FS would require PG&E to conduct monitoring every 3 years for the first 10 years from license issuance and then at 4 year intervals thereafter unless an alternative frequency is agreed upon by the TRG (discussed under "Adaptive Management" in the following section (section 5.2.3, *Terrestrial Resources*)).

We estimate that our fish and invertebrate monitoring plan would decrease the net annual benefit by about \$66,790 whereas the FS fish and invertebrate monitoring plan would decrease the net annual benefit of the project by about \$41,180. The reason for this difference is that the FS program would entail one less year of sampling than our recommended plan. The FS monitoring plan would not entail annual sampling for the first 4 years from license issuance, but we consider such monitoring important to document the response of the aquatic community to the flow regime that would be specified in a new license. Most fish and invertebrates that occur in the bypassed reaches would have experienced at least one complete reproductive cycle in 4 years, and it is likely that different water year types would occur during the initial 4 year period of the new license. Thus, monitoring fish and invertebrates, including angler success, during the first 4 years should provide a reasonably accurate indication of the aquatic community response to the new flow regime. If the response of the community is not as anticipated, adaptive adjustments can be considered relatively early in the term of the license. Monitoring at 3 year intervals for the first 10 years from license issuance may not be sufficient to characterize the aquatic community response to the new flow regime, and if downward population trends are indicated by the monitoring, adaptive adjustments would not be able to be made until much later in the term of the license. We consider the environmental benefit that such monitoring would facilitate to be worth the incremental cost of our recommended monitoring frequency.

Other monitoring of both aquatic and terrestrial communities and associated habitat would likely be included in a new license for this project, including the BCMP, gravel

augmentation, and the collection of baseline data for potential recreation streamflow releases to the Pit 5 reach. To maximize efficiency of data collection, and interpretation of results, and to avoid redundancy, we recommend that the fish and invertebrate monitoring plan be coordinated with these other plans.

As part of its 4(e) condition, the FS specifies that if fish monitoring should indicate that ongoing entrainment may possibly be a significant contributing factor toward a substantive downward trend in the affected special status species' population that could result in federal listing, an adaptive management strategy could be for PG&E to develop and implement a statistically meaningful entrainment study at the powerhouse tailraces. Many factors could contribute to a downward population trend of fish in project waters. Some factors are associated with natural population variability and not directly related to project operations, such as prolonged droughts, periods of unusually high temperatures, or cyclic reproductive cycles (the normal life history of a fish results in periodic very successful year classes followed by a series of less successful year classes). Some factors could be associated with project operations, such as an inappropriate flow regime, accidental circumstances (e.g., equipment failures result in too much or too little water reaching affected aquatic habitat), or entrainment.

We agree that if fish monitoring suggests a substantive downward population trend of FS special status species, entrainment monitoring may need to be considered to explain the reasons for such a downward population trend. Prior to implementation of entrainment sampling, or any other potential adaptive response to fish and invertebrate monitoring, the Commission would review the basis for requesting the entrainment monitoring (or other adaptive measures that may be proposed) and the proposed entrainment sampling plan. The Commission would then determine if entrainment monitoring, or other proposed adaptive measures, are warranted based on the evidence provided. Because entrainment monitoring is just one of many potential adaptive measures that could result from fish and invertebrate monitoring, we do not specify entrainment monitoring in our fish and invertebrate monitoring recommendation.

Gravel Augmentation

There is little doubt the project dams restrict the downstream movement of gravel which may be suitable for spawning, and also woody debris. It is not, however, inherently obvious that this restriction has a negative influence on the trout populations in all three bypassed reaches, as the Pit River is considered by many to be one of the premier trout streams in California. The catch statistics that we have reviewed (see section 3.3.2, *Aquatic Resources*) support this conclusion. However, we conclude that annual placement of a limited amount of spawning gravel could be done relatively easily from near the Pit 3 dam, the Pit 4 dam, and the Pit 5 dam at a relatively small cost.

We discussed this measure at length during the August 28, 2003, 10(j)/FS clarification meeting (see meeting summary issued by the Commission on September 22, 2003). The FS presented information that considerably more gravel could be delivered to the Pit 3 and 4 bypassed reaches than we had estimated for the specified cost in our draft EIS (about \$15,000 per year per reach). Meeting participants agreed that an overall annual cap of \$30,000 should ensure an adequate gravel supply is delivered to the Pit 3 and 4 reaches to meet agency objectives. FWS and CDFG also indicated that they considered the upper end of the Pit 5 bypassed reach (upstream of Nelson and Kosk creeks) to be in need of gravel augmentation, and that a similar approach using a \$15,000 annual cap could be effective in meeting their habitat enhancement objectives in this reach. At the conclusion of our discussion, we considered that we had established a mutually agreeable framework for meeting the agencies habitat enhancement objectives, and considered this issue to be resolved. The FS final 4(e) condition is consistent with the framework that was established during the 10(j)/FS clarification meeting.

We estimate that implementation of a gravel augmentation plan in all three reaches would reduce the net annual benefit of the project by about \$34,390, which includes the cost of developing the plan. We expect that trout and hardhead spawning habitat would be enhanced in the upper portions of the bypassed reaches with gravel augmentation and expect the environmental benefit to be worth the cost. Monitoring the fish and invertebrate community response to the gravel augmentation (discussed above), as well as gravel movement following initial placement, would enable adaptive adjustments to the plan to be made, as needed. PG&E noted during the 10(j)/FS clarification meeting that at some point, gravel augmentation may no longer be needed and that including an adaptive approach in the gravel augmentation plan would allow PG&E to forgo annual gravel placement in the bypassed reaches if it would serve no environmental benefit. We agree with PG&E that the plan should specify under what conditions gravel augmentation could be reduced or eliminated.

Woody Debris Transport

As with gravel transport, there is little doubt the project dams restrict the downstream movement of woody debris. It is not inherently obvious that this restriction has a negative influence on the trout populations in all three bypassed reaches, as the Pit River is considered by many to be one of the premier trout streams in California. However, the cost of moving woody debris from the Pit 3 intake trashracks to outside of the log boom and allowing the debris to be carried over the dam during a high flow event would be small. We estimate that the cost to develop and implement a woody debris transport plan at the Pit 3 dam would reduce the annual net benefit of the project by about \$11,320. If similar procedural measures can be implemented at the Pit 5 dam, as now recommended by the FS and CDFG, the cost should also be small. We estimate that developing and

implementing such a procedural protocol for the Pit 5 dam would reduce the annual net benefit of the project by about \$2,660. Given the high value of the trout fishery in the bypassed reaches and the fact that debris removed from the trashracks would be either burned or transported to an upland disposal site, we consider the benefit of passing woody debris over the Pit 3 and Pit 5 dams (from not only an aquatic habitat perspective, but from an air quality perspective, if burning of woody debris is avoided, or from an aesthetic perspective, if disposal of large woody debris at a land fill or elsewhere is avoided) to be worth the minimal cost.

Protection of the Hat Creek Wild Trout Management Area

As stated in its rationale statement for its proposed license measure for the Hat Creek fish barrier and Hat Creek Wild Trout Area, submitted to the Commission by letter dated December 29, 2003, the introduction of smallmouth bass to Lake Britton subsequent to the construction of the Hat Creek barrier dam means that this dam prevents the movement of this fish into the Hat Creek Wild Trout Area. The Hat Creek barrier dam therefore serves as an essential component of the Hat Creek Wild Trout Management Program by preventing the impacts from non-trout species entering and becoming established in Hat Creek. PG&E acknowledges that given these circumstances, it shares responsibility with CDFG for assuring the presence of an effective fish barrier as a component of CDFG's management program for Hat Creek and PG&E's mitigation for potential Pit 3, 4, 5 Project impacts. We agree that the presence of Lake Britton has fostered the expansion of populations of non-native species and that the presence of the Hat Creek fish barrier supports a CDFG management program. We consider shared responsibility for maintaining and, if necessary, replacing the Hat Creek barrier to be appropriate and recommend implementation of the measures that pertain to this, listed as items 5 and 6 of PG&E's recommended measures in section 5.2.1.

We applaud PG&E's commitment to also fund implementation of measures that pertain to the Hat Creek Wild Trout Area Management Plan. However, as a general rule, current Commission policy does not support including as a license condition the funding of unspecified future environmental measures that may not have a nexus to project purposes. CDFG has already developed a Hat Creek Wild Trout Management Plan, which lists a number of specific environmental measures that are planned to protect and enhance this important fishery (Deinstadt and Berry, 1998). If there are plans to update this plan, we consider it appropriate for PG&E to be involved in such discussions, because PG&E is the licensee for the upstream Hat Creek Project and the downstream Pit 3, 4, 5 Project. However, our support of PG&E's cooperative maintenance of the Hat Creek fish barrier is designed to prevent the waters upstream of this dam (the Hat Creek Wild Trout Management Area) from being affected by fish communities that reside in Lake Britton. With the barrier dam in place, we are not able to establish a nexus of this element of

PG&E's proposed measure to project purposes. This finding deters us from recommending that any new license that may be issued for this project include PG&E's proposed funding of fish enhancement measures in the Hat Creek Wild Trout Management Area. However, we would certainly not object to the implementation of this element of PG&E's proposed measure.

5.2.1.3 Terrestrial Resource Measures

Vegetation and Noxious Weed Management

PG&E originally proposed to develop a noxious weed control plan as well as a vegetation management plan that would include maps of sensitive plant species locations to facilitate the protection of these populations during planned project O&M activities (see section 3.3.3, *Terrestrial Resources*). In addition, PG&E proposed to conduct sensitive plant surveys prior to ground-disturbing activities. We consider the control of noxious weed to be a component of an overall vegetation management strategy, and therefore we recommend that PG&E develop a vegetation and noxious weed management plan. Many of the elements of our recommended plan are consistent with measures either originally proposed by PG&E or agreed to by PG&E following their review of our draft EIS. In some cases, we have added details in response to recommendations and concerns raised by other entities. For example, we recommend that consideration be given to improvement of wildlife habitat by using such measures as prescribed burns and other fuel control measures. We do not necessarily recommend that prescribed burns be implemented, because of the limited amount of land within the project boundary and the potential for inadvertent wildfires, but we consider it appropriate to evaluate measures that would control vegetative fire fuels, to the extent possible within the constraints of other management objectives. We also provide details of specific elements that we expect to be included in the plan to address the control of noxious weeds. Many of these details may have been specified by PG&E during plan development, but we consider it appropriate to define our expectations of plan content prior to plan development.

We estimate that consultation and potential implementation of measures related to vegetative fuel control to enhance wildlife habitat would reduce the annual net benefit of the project by about \$2,840. We estimate that the cost to develop measures to control noxious weeds would decrease the net annual benefit of the project by about \$54,380. We estimate the cost to develop and implement the remainder of the vegetation and noxious weed control plan would decrease the annual net benefit of the project by about \$14,950. Collectively, the annual cost to develop and implement our recommended vegetation and noxious weed control plan would be about \$72,170. We consider the protection that would be afforded to sensitive plant species, potential enhancements to wildlife habitat and ethnobotanical resources, and control of noxious weed populations within project

influenced areas to be worth the cost.

Riparian Vegetation Monitoring

PG&E proposes to develop and implement a riparian vegetation monitoring plan for the three bypassed reaches to document changes over time in response to the flow regime specified in a new license. We expect the new flow regime to alter the riparian vegetation community along the bypassed reaches. This would have both beneficial and negative consequences. By monitoring the vegetation as well as populations of fish and wildlife that are dependent on riparian vegetation (discussed elsewhere), the need for adaptive adjustments can be evaluated. We estimate that PG&E's proposed plan would decrease the annual net benefit of the project by about \$9,970 and we consider the potential benefits that would occur from such monitoring to be worth the cost. We adjust PG&E's proposal by identifying the entities to be consulted during the plan development (the FS, FWS, CDFG, and the Tribe) and specify that the plan should contain measurable parameters, survey protocols and timing, and provisions for reporting the results of riparian monitoring. Our modifications should not change the costs associated with this measure.

Special Status Species Monitoring and Protection

Many sensitive species of wildlife inhabit the project area and adjacent habitat. As discussed in section 3.3.3, *Terrestrial Resources*, sensitive species known to reside in the project area include terrestrial molluscs, foothill yellow-legged frog, western pond turtle, goshawk, peregrine falcon, bank swallow, neotropical migrant birds, and several species of bats.

In some cases, management measures that would protect or enhance the habitat for these sensitive species are already evident. For example, PG&E's consultant identified several measures that would protect sensitive bats, such as installing a gate at the Pit 4 tunnel adit to prevent humans from entering the cave and disturbing roosting sites, while allowing free passage for bats, and screening a stairwell at the Pit 4 dam and a vent at the Pit 5 gaging station to prevent bats from entering these areas. PG&E now proposes to implement these measures, following consultation with a recognized bat expert. Our only modification to these measures is to ensure that the protective structures that would be installed are monitored during our recommended project patrol to ensure that they are functioning as planned. We estimate that measures to protect bats would decrease the annual benefit of the project by about \$2,070, and the benefits of this minor cost are warranted.

In other cases, management measures, if any are needed, have yet to be determined. Studies, population monitoring, and consultation are needed to define potential management measures that could protect or enhance populations of sensitive species.

PG&E proposes to annually monitor known peregrine falcon nesting territories and develop bank swallow monitoring protocols with appropriate resource agencies. We estimate that these two monitoring plans would decrease the net annual benefit of the project by about \$6,740, but the monitoring would provide a basis to determine if any management measures are needed to protect either of these sensitive species and is warranted. We slightly modify PG&E's peregrine falcon monitoring measure by recommending that PG&E consult with the FS, FWS, and CDFG prior to initiating monitoring surveys to determine if adjustments should be made in accordance with the recently issued federal monitoring plan for the peregrine falcon (FWS, 2003). We also slightly modify PG&E's proposed bank swallow measure by recommending that monitoring be coordinated with Lake Britton erosion monitoring that would be specified in the final HPMP and in our recommended erosion and sedimentation control plan for areas not addressed in other plans. Such coordination would maximize efficiency and ensure that potential management measures that may be considered for bank swallows would be consistent with the protection of cultural resources and the need to minimize sedimentation in project waters. We expect any costs associated with our modifications of PG&E's proposed measures to be inconsequential.

In addition to PG&E's proposed wildlife monitoring, we recommend that PG&E monitor populations of sensitive terrestrial molluscs and neotropical migrant birds, northern goshawks (if project related construction or vegetation management could affect potential nesting habitat), and western pond turtles. Monitoring these sensitive species of wildlife would enable population responses to environmental measures that are included in a new license, such as modified flow regimes and new or expanded recreational facilities, to be evaluated, and adaptive management measures considered, as appropriate. We estimate that implementation of these additional monitoring plans would decrease the annual net benefit of the project by about \$28,040, but as noted in the preceding paragraph, such monitoring would form the basis for determining if adaptive management measures are needed, and we consider the cost to be justified.

Foothill yellow-legged frogs are known to currently occur in the Pit 4 bypassed reach. Studies conducted on this population to date indicates that in some respects, this population seems to respond to habitat conditions in a manner similar to other populations in California (e.g., the Trinity River), but in other respects it does not. For example, predicted breeding locations were identified in the Pit 4 reach based on breeding habitat at other California rivers. Studies showed that breeding occurred at locations where it was predicted. However, breeding also was documented at locations where it would not be predicted to occur. These studies also provide a reasonable level of confidence that the

recommended flow regime would not have an unacceptable adverse effect on this population. However, until a new flow regime is actually implemented, it is not possible to evaluate how the foothill yellow-legged population will respond to the new regime without an additional targeted study. FS final 4(e) condition No. 23.c provides a framework for such a targeted study. Included in this study would be temperature monitoring in conjunction with breeding site monitoring to enable determination of the water temperature that triggers the onset of breeding. This information would be used to ensure that freshet flow releases do not occur during the foothill yellow-legged frog breeding season. We agree that the FS framework represents a reasonable approach for developing a study plan that would facilitate the protection of this sensitive species. We estimate that developing and implementing this study plan and associated monitoring would decrease the annual net benefit of the project by about \$47,160, but given the direct influence of project flows to this known population of frogs, we consider the cost to be warranted.

Much of the project lands and waters are within the Shasta National Forest. As such, the FS is charged with managing the associated natural resources. One method used by the FS to manage natural resources is to identify various FS sensitive species and ensure that populations of such species and associated habitat are protected. The FS has prepared Biological Evaluations that assesses the potential effects of all known aspects of project relicensing on FS sensitive species (letter from K. Turner, FS Pit 3, 4, 5 Team Leader, to the Commission dated November 20, 2003). It is possible that designated FS sensitive species may change during the term of a new license and that future project-related actions may influence newly designated sensitive species. We therefore recommend that PG&E consult with the FS prior to undertaking actions that could affect FS sensitive species to determine whether preparation of a Biological Evaluation is necessary. We cannot predict what species might be added to the FS sensitive species list in the future, and therefore we have no basis to determine any cost associated with this measure.

Adaptive Management

Numerous project-related activities have the potential to influence the sensitive species that are in the project area including: changes in the minimum flow regime; untimely and rapid release of flows to the bypassed reach from spills or recreational releases; disturbance of important habitat by recreationists; and bank erosion along the shoreline of Lake Britton. Some project effects may be positive for some species and negative for others. Monitoring populations provides a basis for quantifying the effects of project operations. Such monitoring should be carefully designed and the results interpreted such that population variability from natural events such as wet, dry, hot, or cold weather are not confused with project effects. However, monitoring should be conducted with the potential for actions to be taken as a result of the findings. Such potential management measures may not be evident until after multiple years of monitoring. PG&E

has agreed to many ecological monitoring programs, such as monitoring fish, aquatic invertebrates, riparian vegetation, peregrine falcons, bank swallows, bald eagles (in accordance with a revised BCMP), and baseline ecological data collection associated with the recreation streamflow release plan, which is part of the PRCT agreement. In addition, we recommend that monitoring of invertebrates, fish, and wildlife be conducted in a coordinated manner to ensure that the interactions between species is accounted for and potential adaptive management measures developed in a consistent manner. We also recommend monitoring for additional species not proposed by PG&E: neotropical migrants, terrestrial molluscs, northern goshawk, foothill yellow-legged frog, and western pond turtle.

We agree that the formation of a TRG, which would include signatory parties to the PRCT agreement, would represent a reasonable forum for reviewing and making recommendations to the Commission for license amendments that pertain to adaptive management or project-related resources. These entities are familiar with the intricacies of the relationship of project operations to affected environmental resources because of their participation in the collaborative process. However, the Commission does not have the authority to compel any stakeholder except PG&E to participate in an Environmental Resource Committee or TRG. Consequently, the Commission can only ask that PG&E invite other stakeholders to participate in a TRG.

However, we can recommend the parties with whom PG&E should consult in the development of a biological monitoring and adaptive management plan, and we have included what we consider to be the appropriate entities in this consultation: the FS, CDFG, FWS, SWRCB, CDFR, and the Tribe. We provide the specifics of our recommendation in item 22 for those measures that we recommend that go beyond those proposed by PG&E.

We estimate the annualized cost to develop and implement our recommended biological monitoring and adaptive management plan to be about \$5,840. These costs are associated with the initial development of the plan, consultation with appropriate entities regarding monitoring results and the need for any adaptive adjustments based on the monitoring results, and periodic updates to the plan, if needed. The costs of the monitoring itself are not included in this estimated cost. We conclude that implementation of this adaptive management plan represents a necessary cost to help ensure the protection of the numerous special status species that could be influenced by project operations. Monitoring would document compliance with resource agency management objectives or the need for remedial measures. In some instances, such as the gravel augmentation program, consultation regarding monitoring results may lead to a reduction in the level of expenditures that are required of PG&E, if there is no demonstrated environmental benefit associated with specific measures. We conclude that these environmental benefits are worth the cost.

5.2.1.4 Threatened and Endangered Species Measures

Valley Elderberry Longhorn Beetle Protection

As discussed in section 3.3.4, *Threatened and Endangered Species*, PG&E proposes to develop and implement a plan for the protection of VELB, including pre-construction surveys, where needed, and training and education for crews that are responsible for project O&M. Potential VELB habitat is limited to elderberry plants with stem diameters of at least 1 inch in diameter. PG&E has conducted VELB surveys at representative locations, but it is possible that sites for new or modified facilities that are recommended in a new license may occur at unsurveyed locations. This plan would ensure that appropriate surveys are conducted prior to potential habitat disturbance, so that protective measures can be implemented, as appropriate. We estimate that PG&E's plan would reduce the annual net benefit of the project by about \$1,840 and this minimal cost is warranted. We make a minor modification to PG&E's proposed measure. The current guidelines for protecting VELB were issued by the FWS in 1999. It is possible that these guidelines may be modified during the term of a new license. If the protection guidelines are so modified, we recommend that PG&E modify its VELB protection plan to reflect the modified guidelines. We do not expect our modification to PG&E's proposal to have a substantive cost.

Northern Spotted Owl Protection

PG&E proposes to map suitable habitat for northern spotted owl that could be affected by project operations, in consultation with the FS, FWS, and CDFG. Such mapping would provide a basis for assessing whether surveys for northern spotted owls may be needed prior to project-related activities. We expect that GIS databases that PG&E has already developed for project purposes are likely to be sufficient for the habitat mapping that would be developed. The agency consultation would verify the specific combination of parameters that would need to be grouped to identify potential owl habitat. Therefore, the annualized cost of this measure should be minimal; we estimate about \$1,320. We modify PG&E's proposed measure by recommending that PG&E identify during its agency consultation the process that would be used to determine if field surveys and possible protective measures are needed, and develop a plan that identifies that area to be mapped, the process to determine when field surveys would be required, the buffer zone around the potential activity that would be subject to survey, and a schedule for submitting the maps to the Commission. We do not expect our modification of PG&E's proposal to substantially change the cost of this measure.

Bald Eagle Protection

PG&E has recognized the need for monitoring fish and wildlife populations and their habitat. The IBEMP that was cooperatively developed by PG&E and several resource agencies defined measures that would ensure the protection of bald eagle populations in the project area. One such measure was the BCMP, which entailed both monitoring bald eagle populations and their prey, which consists primarily of fish. PG&E has proposed to revise the IBEMP with updates every 5 years and agrees to conduct appropriate monitoring that would be specified in the revised IBEMP in accordance with an updated BCMP. We estimate that the annualized cost of updating the IBEMP would be about \$3,610 and that monitoring associated with an updated BCMP would be about \$104,530 in addition to the cost of proposed fish monitoring. However, considering the IBEMP would provide structure for management decisions and the results of BCMP monitoring would be used to assist in the management of the federally listed bald eagle, we consider this to be an appropriate cost.

We expect that PG&E would consult with the FS, FWS, CDFG, SWRCB, and CDPR, at a minimum, in the revision of the IBEMP. We modify PG&E's proposal by recommending that local communities, such as Burney and Big Bend, commercial operators (e.g., guides), and recreational groups (e.g., AWA, Trout Unlimited, Fly Fishers, California Trout), also be consulted in the preparation of the IBEMP, since measure to protect bald eagles could require the cooperation of these groups. We also recommend that the Tribe be included in the consultation, because of the importance of the bald eagle to their culture. We also specify several details that we expect would be included in the revised plan.

5.2.1.5 Recreational Measures

Recreation Management

PG&E proposes to develop a comprehensive recreation management plan, including site design drawings and implementation schedule. We estimate that development of this plan would decrease the annual net benefit of the project by about \$3,290 (this does not include the design costs for facilities that would be described in the plan; we factored design costs into the individual costs of the measures). We provide additional details of what we expect to be included in the recreation management plan. Most of these details would most likely have been included by PG&E, but we consider it appropriate to identify our expectations prior to plan development. The FS also requested that PG&E address issues pertaining to dispersed public use along the bypassed reach. We agree that such issues should be addressed in the recreation management plan, but make a clear distinction that PG&E should not necessarily be responsible for solving the identified issues. A nexus

to project purposes would need to be established in order for us to conclude that PG&E should correct a problem. The details that we recommend be included in the recreation management plan should not appreciably increase the cost of developing this plan.

PG&E has agreed to implement many of the measures that we recommended in the draft EIS. In some instances, we modify PG&E's proposed measures based on our analysis of the record. We discuss our modifications to PG&E's measures below.

PG&E agrees to implement most of our recommended measures at the North Shore Campground, but only indicates that it would consider installing flush toilets, showers, and providing firewood for campers. We recommend that PG&E implement these measures. Installation of flush toilets and showers would be expected to protect the water quality of Lake Britton and enhance the recreational experience of the public. Providing firewood for campers would reduce the incidence of campers illegally gathering firewood from adjacent lands and would protect the associated habitat. Our modification of PG&E's proposal should not appreciably affect the estimated annual net benefit reduction of \$51,320 for North Shore Campground improvements.

PG&E agrees to develop a plan that assesses options to address capacity issues at Lake Britton and recreational boating management options to help control potential recreational use conflicts. We agree that such an assessment is appropriate. We also conclude in section 3.3.5.2, *Recreational Resources*, that addressing capacity would best be handled by expanding existing facilities in a carefully designed manner, rather than developing new facilities that would create new centers of public activity that could result in substantially greater effects on sensitive resources. In some cases, the site specific measures proposed by PG&E would serve to address some of these capacity issues. The FS would require that PG&E increase the day-use capacity at Lake Britton by 100 PAOT and the camping capacity by 39 sites within 15 years of license issuance, focusing on expansion at existing sites. Existing day-use areas and campgrounds at Lake Britton frequently operate at capacity, which may result in the public that is turned away from such facilities creating their own informal day-use and camping areas. This uncontrolled, informal use can result in harm to sensitive resources, because the public is either unaware of the resources or is not concerned about protecting the resource. We therefore agree that controlled expansion of existing day-use and camping areas is reasonable, and a natural extension of PG&E's proposed plan to assess capacity issues. We expect that much of the cost of implementing the additional capacity is already built in to the estimated costs for improvements to various facilities. However, we expect that meeting the defined capacity goals that we establish could result in an additional reduction of the net annual benefit of the project by about \$14,870, but we consider this cost to be warranted.

We also conclude that a natural extension of PG&E's plan to assess management options to help control potential recreational use conflicts would be to develop a reservoir water surface zoning plan. This would facilitate publicizing the results of any discussions that PG&E would have with Shasta County regarding adjusting Lake Britton boating restrictions (which are set by the county). Use of this zoning plan could be incorporated into PG&E's proposed information and education plan. Because this zoning plan is an extension of a plan that PG&E already plans to develop, it should not substantially add to the cost.

Similarly, we recognize that the county establishes boating restrictions on the other project reservoirs. If the county ordinance should be modified to allow public use by non-gasoline powered boats on the Pit 4 reservoir, we consider it appropriate for PG&E to assess the most appropriate location for this access. PG&E currently launches a boat for maintenance purposes near the Pit 4 dam, and this location may also be able to serve public flatwater boating access needs, as well as an alternative whitewater boating take-out site. This assessment is contingent on the county modifying its ordinance, but we consider it appropriate to include in the recreation management plan a contingency that accounts for the possibility that public boating access to the Pit 4 reservoir may become legal.

PG&E proposes numerous improvements to the Jamo Point boat launch area and the Pines picnic area. We estimate that PG&E's proposed improvements would decrease the net annual benefit of the project by about \$8,580. We modify PG&E's proposal by recommending that PG&E be responsible for trash removal and maintenance of restrooms at the Jamo Point and the Pines recreational sites during weekends from Labor Day through the end of September. Although recreational use at Lake Britton declines after Labor Day, some use still occurs throughout September, primarily on weekends. Without some provisions for trash removal and rest room maintenance, project lands and waters would likely be degraded by litter and informal latrine arrangements. We estimate that providing such maintenance would be relatively inexpensive, about \$500 a year, and warranted.

PG&E proposes to make improvements to the parking area at Talus Siren and to trails that provide access to the bypassed reaches at Powder Spur, Delucci Ridge, Rock Creek, Malinda Gulch, and Oak Flat. We estimate that these proposed enhancements would reduce the net annual benefit of the project by about \$16,140. We provide details of what we expect to be included in the trail improvements, including erosion and sedimentation control measures, stabilization of existing erosion sites, providing appropriate signage, ensuring there is adequate parking near each trailhead, and providing trash receptacles and sanitation facilities, as appropriate. Our details should ensure that the present informal recreation use of these trails continues in the future in a manner that minimizes degradation of adjacent water quality from sedimentation and inappropriate sanitation practices. We

expect that the details that we provide would be included in the overall costs to make the designated trail improvements.

PG&E proposes to develop the site of spoil pile 4D, near the Pit 4 dam into a scenic overlook. We estimate that doing so would decrease the net annual benefit of the project by about \$710. We expect that most of the cost associated with preparing this site for recreational use would be wrapped into the spoil pile management plan. We provide details of what we expect should be included in the design of this site, including parking areas, pathways, signage, and safety barriers. We expect such measures would be included in PG&E's proposed design, but we consider it appropriate to identify our expectations prior to plan development.

PG&E proposes to provide improvements to the Ruling Creek dispersed camping area. We estimate that the cost of doing so would decrease the net annual benefit of the project by about \$7,000. Because spoil pile 4D is close to this site and there are piles of road debris on the site, we expect that some of the costs for improvements to this area would be wrapped into the spoil pile management plan. Based on comments received in response to the draft EIS and rationale provided by the FS, we provide details concerning the specific measures that we expect to be implemented at this site, such as providing a vault toilet, trash receptacles, realigning the access road to this site away from the river, stabilizing the riverbank once the access road is relocated, designating campsites and parking areas, installing fire rings to provide better protection from wildfire, and improving pedestrian access to the river, which would benefit both anglers and boaters. We do not expect these details to change the overall estimated cost for Ruling Creek enhancements.

PG&E proposes to provide whitewater boater put-ins and take outs in all three bypassed reaches. We estimate that doing so would decrease the net annual benefit of the project by about \$8,950. Because whitewater boater access is already available to some degree at some locations, such as at the Pit 3 dam, and would be available if incorporated into the design of other recommended facilities, such as the proposed Pit 3 tailrace day-use area and the Ruling Creek dispersed camping area, we provide details of what we expect PG&E to be responsible for, at a minimum, in each bypassed reach. We consider such clarity to be a benefit for all parties, and would avoid unmet expectations following plan development. Our clarifications should not add substantively to the cost associated with providing whitewater boater access.

We have reviewed the record and conclude that two measures beyond those now proposed by PG&E are warranted: implementation of recreational improvements in the vicinity of the Hat Creek barrier dam; and providing a day use area at either the Pit 5 or Tunnel reservoirs.

PG&E expressed concern about developing a public access point in the vicinity of the Hat Creek barrier dam because of nearby sensitive resources and past problems associated with vandalism. We consider the concerns expressed by PG&E and others about this area to be legitimate, and have provided a cautious approach to enhancing this site. We consider this to represent an ideal site for an ADA-accessible fishing area, as well as a car top boat launching site. However, our intent is to provide enough flexibility in our recommendation to adjust the specific amenities at this site, as well as access to this site (whether it be by foot or by vehicles), to reflect the outcome of the consultations with appropriate parties during the development of the recreation management plan. We conclude that this site would continue to be used by the public because of its proximity to the Hat Creek Wild Trout Management Area, and providing more defined amenities, with appropriate restrictive measures in place, may serve to reduce the occurrence of illegal activities. We estimate that developing this site would reduce the net annual benefit of the project by about \$59,900. We expect much of this cost to be associated with protecting sensitive resources. However, given that public use of this area is likely to continue, regardless of whether or not this site is developed, we consider the development of this site in a manner that protects sensitive resources is appropriate.

We recommend that PG&E develop a small day-use area at either the Pit 5 or Tunnel reservoirs. PG&E does not agree with our recommendation, citing very rapid flow-through periods and associated currents that create dangerous conditions for any persons engaging in recreational activities. During our site visit to both locations, which occurred under typical operating conditions, we did not observe any flow conditions that appeared to be overtly dangerous to the point that excluding public access to either area was necessary. Under existing conditions, the public already uses both sites for informal recreation and a day-use area would formalize an existing use, without resulting in discernable incremental risk. In addition, a day use area in proximity to the Pit 5 reservoir could also serve as a Pit 4 bypassed reach whitewater boater take-out point, if developed near the Pit 4 powerhouse. We estimate that the incremental annualized cost for this measure would be about \$1,410, and the modest cost would enhance the public's enjoyment of project lands and waters.

Recreation Monitoring

PG&E proposes to develop and implement a recreation monitoring plan. Recreation monitoring would be used to assess levels of recreation use, need for additional resource protection measures, and the need for facility expansion. The plan would include definition of recreation monitoring indicators, such as occupancy rates, number of user created dispersed areas, litter, vandalism, and effects on sensitive resources. It would also include standards to help define the minimum acceptable condition for each indicator, identification of monitoring frequency, provisions to meet with stakeholders to discuss monitoring results, and identification of measures to assess whether recreation use should

be restricted or allowed to expand. We estimate that developing and implementing this plan would decrease the net annual benefit of the project by about \$3,930. The results of the recreation monitoring would be useful in determining future management options and actions and we consider this cost to be justified.

We add some minor details to PG&E's proposed plan, including assurance that monitoring reports would summarize recreational use by activity, would contain information on boating use (both on Lake Britton and the bypassed reaches), and a clear description of the methods used to collect the data. We also recommend that the plan specify a process where unforeseen recreation-related issues that could be identified during the monitoring would be addressed in a timely manner. For example, if monitoring revealed that recreational use of a new facility such as that which may be constructed near the Hat Creek barrier dam was having an adverse affect on sensitive resources, we expect the process that would be used to resolve the issue to be defined in the monitoring plan. This would facilitate timely resolution of such issues. We also clarify that we expect the recreation monitoring summary reports to be submitted with the FERC Form 80 submittals at 6 year intervals, along with any proposed recreational enhancements or resource protection measures that are proposed in response to the monitoring. We do not expect these details to add substantively to the cost of this proposed measure.

Interpretive and Education Measures

PG&E proposes to develop an interpretive and education plan that includes information about the history of the project, Native Americans, local history, project-related natural resources, resource management actions that are planned or ongoing, appropriate recreation behavior, and maps. We estimate that developing and implementing this plan would decrease the annual net benefit of the project by about \$9,610. We recommend the addition of certain elements to PG&E's plan, such as including public safety information, and a description of the specific measures that would be used to provide the interpretive materials to the public, such as where brochures would be distributed, the location of proposed signage, the frequency that the information would be updated, as appropriate. We do not expect these details to add substantively to the cost of this measure.

Recreation Streamflow Releases

We agree with PG&E's proposal to develop a plan for providing annual recreation streamflow release in the Pit 5 reach that are suitable for whitewater boating, as specified in the section of the PRCT agreement entitled "Recreation Streamflow Releases." However, there is no mention of the Commission approving the implementation of scheduled recreational releases in the PRCT agreement. We conclude that the recreation

streamflow release plan should include baseline data reporting requirements and the report filed with the Commission should make a clear statement regarding whether the consulted entities recommend implementation (or non-implementation) of recreational releases based on the data collected. We also conclude that other environmental factors besides ecological effects on aquatic biota should be addressed during baseline data collection. These factors include: (1) whether the expected increased recreational use associated with scheduled releases would result in an increased fire risk, and how such an increased risk would be addressed; (2) provisions for providing persons trained in whitewater rescue during scheduled releases; (3) identifying the entities responsible for litter cleanup following scheduled releases; and (4) an assessment of the effect of scheduled releases on sensitive cultural resources. This baseline report would provide the basis for the Commission to authorize or not authorize the implementation of flows in accordance with the schedule specified in the PRCT agreement. We further discuss whitewater boating releases in sections 3.3.2.2, *Aquatic Resources*, 3.3.3.2, *Terrestrial Resources*, and 3.3.5.2, *Recreational Resources*.

We estimate that development of a whitewater boating plan would decrease the annual net benefit of the project by about \$2,630. Collection of baseline data prior to initiation of scheduled releases would decrease the annual net benefit of the project by about \$32,900. Implementation of scheduled releases would decrease the annual net benefit of the project by \$83,000 (associated with the loss of 2,219,000 kWh of energy). Monitoring boater use if scheduled releases are implemented would decrease the annual benefit of the project by about \$670, and environmental monitoring if scheduled releases are implemented would decrease the net annual benefit of the project by about \$19,740. Collectively, preparing for and implementing scheduled whitewater releases would decrease the net annual benefit of the project by about \$138,940. We consider the \$35,530 in annualized costs that would be needed to provide sufficient data to reach a decision about implementation of scheduled whitewater releases to be worth the environmental benefit.

5.2.1.6 Land Use and Aesthetic Resource Measures

Road and Facilities Management

PG&E proposes to develop and implement a road management and maintenance plan (discussed further in section 3.3.6, *Land Use and Aesthetics*). Elements of developing and implementing the plan that PG&E proposes (which include plan development, inventory access roads and parking areas and determine which should be closed to the public, development of an ORV plan for the Lake Britton area, and conducting traffic surveys to assess public use of project roads) would reduce the net annual benefit of the project by about \$24,900. Although PG&E agrees to consult with the FS, the Tribe, and other

interested agencies to develop specifics for road rehabilitation, there is no commitment to implement specific measures. We consider the costs to bring project roads up to applicable standards to be an O&M cost not directly related to this relicensing proceeding. However, implementation of some of the measures that we recommend in the road and facilities maintenance plan (see description of item 28) would represent an incremental cost over such O&M costs. Such costs associated with this plan are very subjective at this point and could vary widely depending on the specific measures that are agreed upon during PG&E's consultation with the agencies regarding project road rehabilitation and maintenance. We estimate that the annualized cost of the measures that are recommended by us, but not clearly proposed by PG&E, to be about \$11,580, which we consider to be a placeholder for actual measures that would be implemented. Proper maintenance and management of project roads would minimize erosion and sedimentation, control dust on un-paved roads, and ensure public safety on project roads that are also used by the public. We consider the costs to be warranted.

Project Patrol

We recommend that PG&E implement a plan to provide full time (40 hours per week) patrol of the project for purposes of resource protection, including routine inspections of affected lands, project facilities, and structures including implemented protection, mitigation, and enhancement measures, and the provisions of the HPMP. This measure should serve to deter vandalism to some extent, and would enable early identification of protective measures that are not functioning as originally planned. We estimate that implementation of this plan would decrease the net annual benefit of the project by about \$26,050. We consider the safety and resource protection benefits that would result from this expenditure to be warranted.

Fire Management and Response

PG&E proposes to develop a fire management and response plan consistent with our recommendation in the draft EIS. We estimate that this plan would reduce the net annual benefit of the project by about \$4,630. The FS final 4(e) condition No. 20.b includes a number of additional elements. We have reviewed them and concur that the additional elements represent prudent fire protection, management, and response measures. Our recommended additional plan elements include: (1) a description of how fire danger and public safety associated with project induced recreation, including fire danger associated with dispersed camping, existing and proposed recreation sites, trails, and vehicular access would be addressed; (2) an analysis of fire prevention needs, including equipment and personnel availability and fire patrols; (3) a list of the location of available fire prevention equipment and the location and availability of fire prevention personnel; (4) provisions for reporting any project-related fires to the FS as soon as practicable; (5) a description of how

fire control and extinguishing would be addressed; and (6) a description of how PG&E would ensure that fire prevention measures would meet water quality BMPs. We expect that many of the above elements have already been developed by PG&E, and therefore should have minimal incremental cost, but we consider it appropriate to include such elements in the proposed plan.

Visual Resource Management

PG&E proposes to develop and implement a visual management plan that would consider practical methods to reduce visual effects of existing facilities during regular maintenance and upgrading, and to minimize visual effects of proposed and recommended new facilities. We estimate that this measure would reduce the net annual benefit of the project by about \$2,320. In response to comments from the FS received on the draft EIS indicating that project-related items such as buoy lines, signs, and other debris, have on occasion broken away from project facilities, we have added an additional element that should be included in this plan. The plan should specify practical methods that would be implemented for removal of project-related debris from project-influenced waters. We do not consider this additional element to substantively alter the cost for this measure.

Signage

We did not recommend a signage plan in our draft EIS, but specified signage needs in various individual plans. However, based on comments provided by the FS, we agree that given the diversity of signage that would be needed throughout the project area, the various criteria that would need to be complied with, and the fact that part of the project is within the Shasta National Forest, but some is not, a single plan to ensure consistency of approach, to the extent possible, is warranted. We do not expect this plan to have a specific defined cost because the cost develop signage would be included in the specific plan to which the signs apply (i.e., recreation management, interpretive and education, road and facilities management, fire management and response, and HPMP).

Land and Habitat Management

In the draft EIS, we recommended consolidation of various plans that pertain to land and habitat management in a single overarching plan. This would facilitate cross referencing of different, but related, plans and, we feel, if organized in an efficient manner (e.g., tabs for specific plans, clear statements of other plans related to specific plans) would facilitate implementation of the plans by PG&E, because numerous plans would all be in a central document. The cost of developing this overarching plan would be negligible; we accounted for individual plan costs in each of the component plans.

Project Boundary Adjustments

Upon issuance of a new license, the Commission must determine if any adjustments to the project boundaries are appropriate, given the conditions associated with the new license. The FS, in its November 14, 2003, letter transmitting its final 4(e) conditions, commented that there appeared to be a need to update and expand the project boundary to ensure that project-related facilities are incorporated into the project boundary. The FS notes that there are several recreational facilities around Lake Britton that are project related but not entirely encompassed by the project boundary. The FS indicates that it would like to consult with PG&E and the Commission regarding this prior to license issuance. We have reviewed the project boundary maps for the entire project as well as our recommended measures and made recommendations in item 34 pertaining to where adjustments to the project boundary seem warranted. As the FS also notes, some facilities have not yet been designed, and upon approval of the final design, additional adjustments may be needed to the project boundary.

5.2.2 Project Decommissioning

After our review of the information available to us, we conclude that there is no basis to decommission the Pit 3, 4, 5 and remove the three project dams. Doing so would eliminate a source of 1,913.7 GWh of generation and would not achieve the objective of restoring anadromous fish to the Pit River, as sought by the Tribe. The warmwater fishery that has become established in Lake Britton would most likely revert to a riverine coldwater fishery. Bald eagle foraging habitat would be reduced, but some foraging would continue to occur in the riverine reaches. Prevailing flows would be substantially higher than current conditions, which may inhibit eagle foraging by obscuring preferred prey (Sacramento pikeminnow and Sacramento sucker) from view. Anglers would not be readily able to wade in much of the Pit River, but fishing would still likely to be good from the shoreline. However, crossing to the other side would be virtually impossible except at those few areas where there are remaining bridges (we assume the bridge on the Pit 3 dam would be removed; it is uncertain whether the bridge over the Pit 5 dam would be removed). Many, but not all, recreational facilities currently associated with the project, primarily at Lake Britton, would be substantially altered (e.g., bathing areas, Jamo Point boat launch), but some could continue to function (e.g., Pines picnic area, camping areas).

5.3 Cumulative Effects Summary

We identified the following resources that have the potential to be cumulatively affected by relicensing the Pit 3, 4, 5 Project with our recommended measures in combination with other activities in the Pit River basin: (1) water quantity; (2) rainbow trout; and (3) bald eagles.

In section 3.3.1 of this EIS (*Water Resources*), we indicate that relicensing the project with provisions for increased flows to the bypassed reaches could result in potential adverse cumulative effects on water quantity because PG&E has senior water rights to many upstream water users and if those senior water rights were exercised, the availability of upstream water for diversion would be sharply curtailed. This would have a substantial negative influence on upstream agricultural and other consumptive water interests. As a result of negotiations with key upstream water users, PG&E has agreed not to initiate any new complaint or claim of water rights harm against any holder of a pre-1914 appropriative, riparian, or permitted or licensed appropriated right, for any diversion or use of water upstream of Lake Britton, as long as the diversions do not exceed the water rights holder's historical diversions before 1985 (letter from R. Livingston, Lead Director, Power Generation, PG&E, to E. Anton, Chief, Division of Water Rights, SWRCB, Sacramento, dated February 13, 2004).

Some of the upstream junior water rights holders have provisions in their water right that restrict their ability to divert flow to periods of spillage at the Pit 3 dam. Operation of the Pit 3 dam in accordance with the PRCT agreement would result in a slight increase in the frequency and duration of spill at the Pit 3 dam. This could translate to a slight increase in the ability to divert flow for those junior water rights holders that have diversion rights tied to spillage at the Pit 3 dam. This would represent a slight cumulative benefit to such diverters.

In section 3.2.2.3 of this EIS (*Cumulative Effects on Rainbow Trout*) we indicate that operating the project in accordance with the provisions of the PRCT agreement may not increase the production of rainbow trout in the Pit 5 bypassed reach, but because it would provide near optimal flows for adult trout, the growth and condition of the trout is expected to improve. This could translate into anglers catching larger trout from the Pit 5 reach downstream to the Pit 6 dam. The management of Lake Britton currently favors introduced warmwater species, including smallmouth bass and other centrarchids. As the population of centrarchids increases, they may increasingly feed on trout fry and juveniles that reside in the tributaries to Lake Britton, as well as in the main stem of the Pit River up to Pit River Falls. This would represent an adverse cumulative effect. We conclude that this cumulative effect results from a combination of project operations, the illegal introduction of centrarchids, and the current CDFG management strategy.

Introduced centrarchids also have the potential to move upstream into Hat Creek. This is currently prevented by the Hat Creek barrier dam, which is currently maintained by CDFG. If this dam should fail, introduced species would likely move into the Hat Creek Wild Trout Management Area, resulting in an adverse cumulative effect on the wild rainbow trout upstream of the barrier dam, and its associated blue ribbon fishery. PG&E's proposed measure to share diversion dam maintenance (and, if necessary, replacement)

responsibilities with CDFG, filed by PG&E with the Commission by letter dated December 29, 2003, should ensure that the dam remains in place and this adverse effect is avoided. We recommend that the Commission include those aspects of PG&E's proposed measure that pertain to the maintenance and replacement of the barrier dam in a new license for this project.

In section 3.3.4.3, *Cumulative Effects on Bald Eagles*, we conclude that under existing conditions, a stable and abundant prey base for the bald eagle, which feed primarily on fish, exists and regulated flows in the Pit River maintain foraging opportunities in smooth, shallow water. Modest increases in flows, such as those proposed in the PRCT agreement, would be likely to maintain or increase the prey base, as well as foraging opportunities, and would represent a cumulative benefit to the bald eagle population.

5.4 Recommendations of Fish and Wildlife Agencies

Under the provisions of the FPA, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of fish and wildlife resources affected by the project.

Section 10(j) of the FPA states that, whenever the Commission believes a fish and wildlife agency recommendation is inconsistent with the purposes of the requirements of the FPA or other applicable law, the Commission and the agency shall attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

On August 28, 2003, Commission staff met in Redding, California, with representatives of CDFG, FWS, PG&E, and other interested parties in an attempt to resolve preliminary determinations of inconsistency with the FPA of six of FWS' and five of CDFG's Section 10(j) recommendations. During the meeting, we resolved three of the FWS inconsistencies and three of the CDFG inconsistencies. Our summary of the meeting was issued on September 22, 2003. The resolution of these issues was subsequently refined by the PRCT agreement or the final 4(e) conditions. Subsequent to this meeting, the PRCT agreement resolved two more of the FWS inconsistencies and one more of the CDFG inconsistencies. The remaining CDFG inconsistency was resolved by PG&E filing a proposed PM&E for the operation and maintenance of the Hat Creek fish barrier dam that had been negotiated with CDFG, by letter to the Commission dated December 29, 2003. We adopt all of the resolutions to these inconsistencies, except a portion of the PM&E proposed for the Hat Creek fish barrier. One FWS inconsistency remains.

Table 54 summarizes recommendations from Interior and CDFG, our conclusions on whether or not the recommendations are appropriate Section 10(j) measures, and whether or not we adopt the recommendations. We consider recommendations that are outside the scope of Section 10(j) under Section 10(a) of the FPA and address them in other sections of the EIS.

Table 54. Analysis of fish and wildlife agency recommendations for the Pit 3, 4, 5 Project. (Source: Staff)

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
1. Implement a water quality monitoring plan to ensure that state water quality standards for DO, BOD, turbidity, conductivity, and pH are being met in project waters.	Interior	Yes	\$31,580	Not adopted
2. Implement a water temperature maintenance and monitoring plan, including measures to maintain mean daily water temperature of 20 degrees C (68 degrees F) or less in bypassed reaches to extent of PG&E's control.	Interior	Yes	\$8,290	Adopted
3. Implement an erosion control plan for project reservoirs and bypassed reaches, including remedial measures at known problem sites (e.g., spoil piles, roads).	Interior	Yes	\$2,320 (in addition to costs of implementing other plans)	Adopted
4. Provide continuous minimum flow of 800 cfs from November 1 through March 31 and 600 cfs from April 1 through October 31 to Pit 3, 4, and 5 bypassed reaches.	Interior	Yes	\$13,820,890	Resolved by PRCT agreement

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
5. Provide the following flow regime to Pit 3, 4, and 5 bypassed reaches: October, 700 cfs; November, 750 cfs; December, 800 cfs; January, 1,000 cfs; February, 1,050; March, 1,350; April, 1,050; May, 950 cfs; June, 700 cfs; July, 650 cfs; August and September, 600 cfs (CDFG does not specify whether this flow regime represents a minimum or average monthly regime; we assume it is a minimum flow regime).	CDFG	Yes	\$17,635,690	Resolved by PRCT agreement
6. Develop an operations and maintenance planned and emergency outage plan to ensure BMPs are in place for protecting the riverine reaches of project waters.	Interior	Yes	\$1,970	Adopted
7. Implement a ramping rate plan to minimize flow fluctuations uncharacteristic of natural seasonal stream conditions, including measures to control flow release changes (up and down) from project reservoirs, powerhouses, tunnels, canals, and any other operator-controlled release points.	Interior	Yes	\$2,640	Adopted

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
8. Limit maximum ramping rate in bypassed reaches to 1 inch of stage change per hour; schedule and scale intentional flow changes to mimic natural flow variability.	CDFG	Yes	Not quantifiable but likely minimal to moderate	Resolved and refined by PRCT agreement
9. Release at least two pulsed flow events each year during period from January to March, with maximum duration of 21 days per event, minimum peak magnitude of 1,500 cfs.	Interior	Yes; although not specified by Interior, would distribute and flush fine-grained substrate from spawning gravel.	\$120,260	Resolved by PRCT agreement
10. Implement a streamflow and reservoir gaging plan.	Interior	Yes	\$17,900	Adopted
11. Hold water surface elevation of Lake Britton between elevation 2,737.5 and 2,734.5 feet NGVD from March 1 through May 31 to protect warmwater fishery.	CDFG	Yes	Not quantifiable, but likely minimal	Adopted
12. Monitor for fish and invertebrates, including angler surveys, in bypassed reaches for first 4 years then in years 8, 12, 16, and 24.	Interior	Yes	\$25,330	Adopted

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
13. Monitor fish and invertebrates, including angler surveys, in bypassed reaches for first 8 years then in years 12, 16, 20, and 24 as part of a BCMP.	Interior	Yes	\$7,210 (incremental cost over item 12)	Resolved
14. Monitor fish populations in project reservoirs for first 8 years then in years 12, 16, 20, and 24 as part of a BCMP.	Interior	Yes	\$9,070	Resolved.
15. Monitor fish populations, with creel surveys, in riverine reaches and Lake Britton every 3 to 5 years.	CDFG	Yes	\$12,210	Adopted; we adopt frequency specified in item 12.
16. Implement a sediment management and monitoring plan for project waters to improve passage of gravel and cobbles past project dams, including placement of gravel downstream of each dam.	Interior	Yes	\$76,970	Resolved
17. Implement a spawning gravel management plan which entails mapping gravel at 3- to 5-year intervals, and may entail spawning gravel placement, depending on mapping results.	CDFG	Yes	\$3,500 (includes mapping costs only)	Resolved
18. Provide access for non-gasoline powered boating to Pit 4 and 5 reservoirs.	CDFG	No*	\$14,940	Adopted (if consistent with county ordinances)

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
19. Develop a large woody debris management plan.	CDFG	Yes	\$69,620 ^b (assumes structural changes at Pit 4 and 5 dams)	Resolved
20. Develop a woody debris/nutrient transport plan that includes an analysis of large woody debris transport and storage under various flows, an analysis of influence of large woody debris on channel morphology, and a plan for placement of woody debris trapped in Lake Britton to Pit 3 bypassed reach.	Interior	Yes	\$11,320 ^c	Adopted
21. Conduct, at a minimum, biannual inspections of the Hat Creek fish barrier dam, and replace or perform needed repairs.	CDFG	Yes	\$5,000	Resolved by PG&E's agreement with CDFG
22. Develop a fish passage investigation plan for assessing potential restoration of volitional passage of anadromous fish between Sacramento and Pit rivers by use of fish diversion structures, canals, other civil works, and necessary measures.	Interior	No; study could have been conducted prior to licensing.	\$3,950	Not adopted

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
23. Implement a vegetation management plan that includes: types and methods of project-related O&M activities, schedules, measures to avoid or minimize effects on special status species; environmental awareness training; noxious weed monitoring and control measures; measures to reduce excess fuels to minimize potential wildfires; and provisions for annual reporting.	Interior	Yes; linked to minimizing harm to fish and wildlife resources	\$72,170 (plus cost of other related vegetation plans)	Adopted; however, we do not adopt the 10-year prohibition of herbicides to control noxious weeds, which Interior includes as a Section 10(a) measure.
24. Implement a riparian vegetation monitoring plan for river channels downstream of Lake Britton.	Interior CDFG	Yes; would provide a basis to minimize damage to fish and wildlife habitat.	\$9,970	Adopted
25. Develop a wildlife resource management plan that includes a description of wildlife resources in the project area and planned protection measures, with emphasis on special status species.	Interior	Yes	\$2,070 ^d	Adopted

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
26. Conduct wildlife surveys every 5 years, and report results.	Interior	No ^a	\$29,390 (plus the cost of items 27 and 28)	Adopted; we interpret this to focus on special status wildlife, rather than all wildlife.
27. Implement a plan for annual monitoring of all active peregrine eyries and suitable nesting habitat in the project area; if a new eyrie is identified, consult with resource agencies on need for protective measures.	Interior	Yes	\$5,390	Adopted
28. Implement plan for annual surveys and monitoring to assess project effects on foothill yellow-legged frogs, including: breeding and tadpole surveys; measures to control non-indigenous predators; and temperature monitoring at known or suspected breeding sites (conducted in conjunction with item 2).	Interior	Yes	\$23,960	Adopted
29. Update the Pit River IBEMP developed in 1986.	Interior CDFG	Yes	\$3,610	Adopted

Recommendation	Agency	Subject to Section 10(j)	Annual cost	Conclusion
30. Implement a BCMP that incorporates elements of the 1993 BCMP plus additional fish monitoring.	Interior CDFG	Yes	\$104,530 (includes only bald eagle monitoring; items 13 and 14 contain fish monitoring costs)	Adopted
31. Comply with terms and conditions required in any biological opinion issued for this project, pursuant to Section 7 of the ESA.	Interior	No ^a	Unknown	Adopted, in part
32. Submit a recreation resource management plan that examines protection and maintenance of recreational activities relating to fish and wildlife resources, including angling and wildlife viewing and effect of recreational activities on fish and wildlife resources.	Interior	No ^a	\$3,290	Adopted; however, assessing effects of recreational activities on fish and wildlife addressed by other plans.

^a Not a specific measure to mitigate, protect, or enhance fish and wildlife resources-considered under Section 10(a) of the FPA.

^b Assumes structural changes would be needed at Pit 4 and 5 dams, as indicated in PG&E's June 21, 2002, AIR response.

^c PG&E already conducted much of the analysis that Interior requests for this plan, so the cost for developing it would be relatively small. We included a \$10,000 O&M cost for removing woody debris from Pit 3 trash racks and placing it upstream of the log boom; debris would be passed over the Pit 3 dam during high flow events.

^d Includes costs for plan development and implementation of management measures; cost of surveys and reporting included elsewhere.

We do not adopt Interior's recommendation to implement a water quality monitoring plan to ensure that state water quality standards for DO, BOD, turbidity,

conductivity, and pH are being met in project waters (item 1). The only existing documentation of water quality criteria that may be linked to project operations relates to DO in the deeper portions of Lake Britton. We also conclude that future project operations are likely to influence the water temperature of project waters. Therefore, instead of broad water quality monitoring in all project waters, we recommend that PG&E develop a water temperature monitoring plan in consultation with resource agencies. We also recommend that PG&E include provisions in this plan to take spot DO readings during low flow, high temperature conditions, to allow documentation that project operations under the new license conditions are meeting applicable water quality standards for DO. We acknowledge that project operations at specific locations could influence turbidity because of increased sedimentation (e.g., adjacent to spoil piles during and after proposed corrective actions; adjacent to shoreline construction sites, such as new or improved recreational facilities; and runoff from project roads). We recommend that PG&E address site-specific erosion and sedimentation issues in specific plans (e.g., spoil pile management plan, the recreation management plan, and the road and facilities management plan). We expect monitoring for turbidity and perhaps other parameters to be a legitimate component of these plans, to ensure that the control measures are functioning as expected. We also recommend development of an erosion control plan to address project-related erosion that may not be addressed by other specific plans. Water quality monitoring could be included in this plan, if deemed necessary during agency consultation regarding plan development. We therefore made a preliminary determination that this measure may be inconsistent with the substantial evidence standard of Section 313(b) (because Interior has not provided evidence that monitoring BOD, turbidity, conductivity, and pH in all projects waters is necessary) and the comprehensive planning standard of Section 10(a) of the FPA, including the equal consideration provision of Section 4(e) of the FPA (because we consider the environmental benefit not to be worth the associated incremental annualized cost of \$23,290 associated with implementing Interiors measure [item 1 in table 54], over our recommended measure [item 2 in table 54]).

We met with Interior (and FWS), CDFG, the FS, and PG&E on August 28, 2003, in an effort to resolve our preliminary findings of inconsistency pursuant to the provisions of Section 10(j)(2) of the FPA. We discussed Interior's recommended water quality monitoring program, including the originally proposed parameters, and additional parameters that Interior thought should be monitored, based on data that indicated elevated levels of nutrients and mercury. The crux of the discussion focused on whether there was a basis to conclude that the elevated levels of nutrients and mercury were connected to project operations. We concluded that we could not reach agreement on alternative measures that also would be acceptable to Interior and Commission staff. Therefore, this issue remains unresolved (see Section 10(j)/FS clarification meeting summary issued by the Commission on September 22, 2003). Interior provided additional details of its recommended water quality monitoring plan in its biological opinion, filed with the

Commission by letter dated October 15, 2003, that included nutrient and mercury monitoring as well as assessment of the locations of methylmercury production in Lake Britton and tracking mercury loading throughout the ecosystem. Based on these additional details, we estimate the annualized cost of such a water quality monitoring program to be at least \$106,580 (although the cost could be substantially more, depending on the nature of the plan that is developed). Given the absence of a linkage of nutrients and mercury in Lake Britton to project operations, we continue to conclude that this substantial cost is not worth the environmental benefits associated with this measure.

In the draft EIS, we did not adopt Interior or CDFG's original minimum flow recommendations (items 4 and 5). All evidence that we have reviewed shows that the current flow regime supports one of the best trout fisheries in California. We agreed that implementing the agency-recommended flow regimes may have some benefits to certain life stages of trout and other aquatic species. However, we concluded that the ability of anglers to fish in the project reaches would be greatly diminished with the originally recommended agency flows and could thwart the achievement of CDFG's stated management objectives, which is based on angler catch statistics. We estimated that the annual cost of implementing Interior's recommended flow regime would be \$13,820,890 and CDFG's flow regime would be \$17,635,690. We instead recommended a continuation of the existing minimum flow regime in the Pit 3 bypassed reach and a modest increase in the minimum flows to the other two project reaches. We estimated that the annual cost of implementing our originally recommended minimum flow regime would be \$2,743,920. We therefore made a preliminary determination that these measures may be inconsistent with the comprehensive planning standard of Section 10(a) of the FPA, including the equal consideration provision of Section 4(e) of the FPA.

At the Section 10(j)/FS clarification meeting, we spent considerable time discussing the proposed and recommended minimum flow regimes in the bypassed reaches. PG&E indicated that ongoing meetings with the PRCT had been quite productive, and there was general agreement on a flow regime that would be acceptable to all concerned. PG&E stated that they hoped to have agreement on flow-related issues in the near future. At the conclusion of the meeting, we agreed that the minimum flow issue remained unresolved, but all were optimistic that it would be resolved shortly (see summary of Section 10(j)/FS clarification meeting issued by the Commission on September 22, 2003). PG&E filed the PRCT agreement on October 29, 2003, which provides the PRCT proposed flow regime for the Pit 3, 4, 5 Project. We have reviewed the proposed flow regime and conclude that it represents a reasonable balance between developmental and non-developmental factors. We recommend adoption of the flow regime specified in the PRCT agreement, and consider this issue to be resolved.

We did not adopt CDFG's original recommendation to limit the maximum ramping rate in the bypassed reaches to 1 inch per stage change per hour (item 8). We instead adopted Interior's recommendation for PG&E to develop and implement a ramping rate plan to minimize flow fluctuations uncharacteristic of natural seasonal stream releases. Agencies consulted during the development of this plan would include FWS and CDFG. We therefore made a preliminary determination that this measure may be inconsistent with the substantial evidence standard of Section 313(b) of the FPA, because CDFG did not provide a basis for why its recommended maximum ramping rate was needed, given the expected low incidence of stranding without any controlled downramping (discussed in section 3.3.2, *Aquatic Resources*).

At the Section 10(j)/FS clarification meeting, CDFG indicated that they could accept our recommended approach to develop a ramping rate plan, given the progress that the PRCT was making in resolving this issue. We agreed at the meeting this issue was resolved (see Section 10(j)/FS clarification meeting summary issued by the Commission on September 22, 2003). PG&E filed the PRCT agreement on October 29, 2003, which provides the PRCT proposed measures pertaining to ramping rates for the Pit 3, 4, 5 Project. We have reviewed the proposed ramping rates and conclude that they represent a reasonable approach to this issue. We recommend adoption of the ramping rate plan specified in the PRCT agreement, and consider this issue to be resolved.

We did not adopt Interior's original recommendation to release two pulsed flow events each year during the January to March period, with maximum duration of 21 days per each event, minimum peak duration of 2 days, and minimum peak magnitude of 1,500 cfs (item 9). Our review of existing flow conditions indicates that spring pulsed flow events of the duration and at least the magnitude recommended by Interior occur in 8 out of 10 years. Interior did not provide evidence why providing high flows during every year is necessary to maintain the ecosystem. Unregulated streams periodically experience years without high flow events, and such dry year respites from floods may serve important ecological functions. Although the details of how Interior's recommendation would be implemented were not clear, we assumed that the scheduled pulsed events would be similar to those recommended by the FS. The annualized cost of implementing Interior's recommended dry year releases would be about \$120,260. Each year that a scheduled pulsed release is made would result in the loss of 12,099 megawatt-hours (MWh) of electricity. Our alternative recommendation was to release one, 1,500-cfs freshet flow during March of years that have been preceded by two dry years in which no flows in excess of 1,500 cfs for at least 2 days have occurred. This would provide a mechanism to flush fine sediments from spawning gravel and redistribute spawning-sized gravel if freshet flows have not been provided because of extended dry conditions. We estimated that our alternative recommendation could be implemented for about half the cost in lost energy revenue as Interior's recommendation. We therefore made a preliminary determination that Interior's

measure may be inconsistent with the substantial evidence standard of Section 313(b), because no evidence was provided as to why two pulsed flow releases a year are necessary to maintain the integrity of aquatic habitat in the bypassed reaches, and the comprehensive planning standard of Section 10(a) of the FPA, including the equal consideration provision of Section 4(c) of the FPA (because the incremental annual cost of Interior's recommended measure is not warranted by the incremental benefit).

At the Section 10(j)/FS clarification meeting, Interior indicated that they were considering the revised 4(e) condition offered by the FS in its May 19, 2003, letter to the Commission, which would call for freshet flow releases after a full year without spills sufficient to flush sediments and mobilize gravel. Interior indicated that they were still working through this issue with the PRCT and did not have a final recommendation to make at our meeting. At the conclusion of the meeting, we agreed that the freshet flow issue remained unresolved, but all were optimistic that it would be resolved shortly (see summary of Section 10(j)/FS clarification meeting issued by the Commission on September 22, 2003). PG&E filed the PRCT agreement on October 29, 2003, which provides the PRCT proposed measures pertaining to freshet flow releases for the Pit 3, 4, 5 Project. We have reviewed the proposed freshet flow regime plan and conclude that it represents a reasonable approach to this issue. We now recommend adoption of the freshet flow plan specified in the PRCT agreement, and consider this issue to be resolved.

We did not adopt portions of Interior's original recommendations pertaining to fish monitoring in project waters, invertebrate monitoring in bypassed reaches, and angler surveys as part of a BCMP (items 13 and 14). Although we agree that such monitoring is needed, Interior did not provide evidence why it would be needed annually for the first eight years from license issuance. We conclude that Interior's monitoring frequency specified in item 12 (the first 4 years after license issuance followed by monitoring during years 8, 12, 16, 20, and 24) should be sufficient to detect substantial fish and invertebrate population changes under the conditions of the new license. We therefore made a preliminary determination that this measure may be inconsistent with the substantial evidence standard of Section 313(b) of the FPA, because Interior's monitoring frequency is inconsistent with its specified monitoring frequency in another 10(j) recommendation, and no evidence is provided regarding which of the two 10(j) measures is justified.

At the Section 10(j)/FS clarification meeting, Interior indicated that they are in agreement with our recommended monitoring frequency for fish and invertebrates (annually for the first 4 years, then at 4-year intervals through the remainder of the license). We consider this issue to be resolved.

We did not adopt Interior's original recommendation to implement a sediment management and monitoring plan to improve passage of gravel and cobbles past project

dams, including placement of gravel downstream of each dam (item 16). We estimated that implementation of Interior's plan could cost \$76,970 a year. We considered it more appropriate to more directly address the consequences of project operation as it pertains to the affected resource. Our review of available information indicates that project dams are reducing the amount of spawning gravel in the Pit 3 and 4 bypassed reaches. We therefore recommended that the first 4 years of fish and invertebrate monitoring that we recommend (item 11) be used to establish initial trout fry relationships to gravel deposits, and that, beginning in year 5, a limited amount of gravel be deposited downstream of the Pit 3 and 4 dams on an annual basis. Spawning gravel does not appear to be in short supply in the lower portion of the Pit 5 reach. Subsequent fish monitoring should be able to provide an indication of whether this gravel is providing an enhancement to spawning conditions. We did not see the benefit of passing gravel that would be too large to enhance spawning and cobbles, which already are fairly common in the project reaches, downstream of project dams. We estimated that the cost of implementing our recommended gravel augmentation plan would be \$23,140 a year. We therefore made a preliminary determination that this measure may be inconsistent with the substantial evidence standard of Section 313(b), because no evidence is provided for why cobbles should be passed downstream of project dams, and the comprehensive planning standard of Section 10(a) of the FPA, including the equal consideration provision of Section 4(e) of the FPA, because the expected incremental benefits to the trout fishery in the bypassed reaches associated with Interior's sediment management and monitoring plan, would not be worth the cost.

We also did not adopt CDFG's original recommendation to map gravel at 3- to 5-year intervals and implement gravel augmentation if a diminishing trend in gravel abundance became evident (item 17). Mapping at the indicated intervals would be heavily influenced by the flow conditions preceding the mapping event and not necessarily indicative of a long-term project-related trend. If a trend emerges from the mapping, it may not be evident until many years into the term of a new license. Our alternative recommendation established baseline conditions and then provided for gravel augmentation. Although some mapping would likely be included in the plan that we recommend, we prefer to have the majority of the funds used for measures that may actually provide a habitat benefit, rather than conducting more extensive mapping studies that would be subject variable interpretations and thus an uncertain habitat enhancement. We therefore made a preliminary determination that this measure may be inconsistent with the substantial evidence standard of Section 313(b) of the FPA, because CDFG provides no evidence regarding how mapping gravel at 3 to 5 year intervals would provide a basis to determine if gravel augmentation is needed.

At the Section 10(j)/FS clarification meeting, the FS indicated that it had solicited quotes from local vendors, and concluded that substantially more gravel (624 tons) could be deposited at the upper end of each bypassed reach for the cost that we had estimated for

a very limited gravel augmentation program. The meeting participants agreed that if a monetary cap could be placed on gravel augmentation, thus defining PG&E's expected costs, and provisions to monitor the gravel and the response of fish populations (specifically, the abundance of trout fry), we could agree that this issue may be resolved. Interior noted that they felt that gravel augmentation should be implemented at all three reaches, since gravel was in short supply at the upper ends of each bypassed reach, and the benefit of the proposed augmentation plan would be likely confined to the areas immediately downstream of the dams. There was general agreement by Commission staff, Interior, and the other meeting participants that a framework for gravel augmentation had been established, and the details could be worked out in a post-licensing plan. We consider this issue to be resolved.

We did not adopt CDFG's recommendation to implement a large woody debris plan (item 20). We posed an AIR to PG&E that was designed to address how such a plan might be implemented. The cost of implementing this plan at the Pit 4 and 5 dams would be quite substantial (we estimated about \$69,620 annually). However, we have not seen any evidence that enough woody debris accumulates at either the Pit 4 or 5 dams to provide any noticeable difference to downstream habitat. Spillage events at both dams during most years would be likely to wash any debris passed downstream out of the main (active) channels and provide minimal habitat enhancements. Instead, our recommendation was to implement measures to pass woody debris that accumulates at the Pit 3 dam and intake structure downstream of the dam. This could be done much more efficiently at this location by using the inflatable rubber crest gates during high flow spillage events. We expect much more woody debris to accumulate at the Pit 3 dam, and passing such debris downstream may result in slight habitat enhancements at minimal cost (about \$11,320 annually) because no structural changes would be needed. We therefore made a preliminary determination that this measure may be inconsistent with the substantial evidence standard of Section 313(b), because no evidence was provided by CDFG that passing downstream the limited amount of woody debris that accumulates upstream of the Pit 4 and 5 dams would result in an aquatic habitat enhancement, and the comprehensive planning standard of Section 10(a) of the FPA, including the equal consideration provision of Section 4(e) of the FPA, because the incremental costs associated with making the necessary structural changes at the Pit 4 and 5 dams is not worth the incremental benefit to aquatic habitat.

At the Section 10(j)/FS clarification meeting, CDFG indicated that woody debris transport had been discussed by the PRCT, and they considered our recommendation to be satisfactory. We consider this issue to be resolved.

Finally, we did not adopt CDFG's recommendation for PG&E to inspect and maintain the Hat Creek fish barrier dam (item 21). We considered this dam to be a

function of the management objectives of CDFG to maintain the Hat Creek Wild Trout Management Area in such a manner that angling opportunities are enhanced, and other native and non-native species are prevented from entering the managed area. Our review of the agreements reached between PG&E and CDFG leads us to conclude that, although PG&E made an initial contribution towards the dam construction, subsequent O&M of the dam was CDFG's responsibility. Other parties, such as the Tribe, have recommended that the fish barrier dam be removed, so that native species such as hardhead, Sacramento sucker, and Sacramento pikeminnow, could return to Hat Creek. Although these species may not have importance to anglers, they do have cultural importance to the Tribe. We therefore made a preliminary determination that this measure may be inconsistent with the substantial evidence standard of Section 313(b) of the FPA, because CDFG provided no evidence regarding how PG&E taking over O&M responsibilities for the dam would be consistent with the existing agreement negotiated with PG&E and CDFG.

At the Section 10(j)/FS clarification meeting, the group discussed the potential nexus of the barrier dam with the project. CDFG pointed out that without Lake Britton, and associated populations of introduced fish, the barrier dam would not be necessary. The FS indicated that if the dam should fail, the Commission may require that a new barrier dam be constructed, but any period without the barrier dam would be likely to allow sufficient numbers of non-salmonid fish to enter the Hat Creek Wild Trout Management Areas to irreversibly alter the fishery. During the meeting PG&E announced that it intended to attempt to negotiate a new management agreement for the Hat Creek barrier dam with CDFG. At the conclusion of the meeting, we considered this issue to still be unresolved, but awaited the outcome of the discussions between PG&E and CDFG.

PG&E filed its proposed measure pertaining to the Hat Creek fish barrier by letter dated December 29, 2003, which reflected the agreed-upon approach to this issue with CDFG. The proposed measure defines PG&E's responsibilities and CDFG's responsibilities for annual maintenance of the dam, setting a cap for PG&E's share of the annual maintenance costs at no more than 50 percent of the annual costs. If the dam should need to be replaced, PG&E and CDFG would again share the costs of replacement, but PG&E's share would be capped at \$1 million. PG&E also proposes to contribute funds for implementation of portions of the Hat Creek Management Plan. We agree with PG&E's proposed shared cost for maintaining the Hat Creek barrier dam, and recommend inclusion of this measure in any license that may be issued for this project. Although we are not opposed to PG&E funding enhancement projects at the Hat Creek Wild Trout Management Area, because the affected reach is upstream of the barrier dam, we find no nexus of this measure to project purposes, and do not recommend this aspect of PG&E's measure be included in a new license for this project. However, because the central issue of maintenance of the barrier issue is addressed by PG&E's measure, we now consider this issue to be resolved.

5.5 Consistency With Comprehensive Plans

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal and state comprehensive plans for improving, developing, and conserving waterways affected by the project. Under Section 10(a)(2), federal and state agencies filed 52 plans that address various resources in California. Sixteen of these plans address resources relevant to the Pit 3, 4, 5 Project:

- (1) California Department of Fish and Game. 1975. California wild trout management program: Hat Creek management plan. Sacramento, CA. September 1975. 53 pp. (we will also consider the 1999 updated version of this plan);
- (2) California Department of Parks and Recreation. 1980. Recreation outlook in Planning District 2. Sacramento, CA. April 1980. 88 pp.;
- (3) California Department of Parks and Recreation. 1988. California Outdoor Recreation Plan. Sacramento, CA. June 1988. 223 pp.;
- (4) California Department of Parks and Recreation. 1993. California Outdoor Recreation Plan. Sacramento, CA. April 1994. 177 pp.;
- (5) California Department of Parks and Recreation. 1998. Public Opinions and Attitudes on Outdoor Recreation in California- 1997. March 1998. 72 pp. and appendices;
- (6) California Department of Water Resources. 1983. The California water plan: projected use and available water supplies to 2010. Bulletin 160-83. Sacramento, CA. December 1983. 268 pp. and attachments;
- (7) California Department of Water Resources. 1994. California water plan update. Bulletin 160-93. Sacramento, CA. October 1994. Two volumes plus executive summary;
- (8) California State Water Resources Control Board. 1975. Water quality control plan report. Sacramento, CA. Nine volumes;
- (9) California State Water Resources Control Board. 1999. Water Quality Control Plans and Policies Adopted as Part of the State Comprehensive Plan. April 1999. Three enclosures;

- (10) California- the Resources Agency. Department of Parks and Recreation. 1983. Recreation needs in California. Sacramento, CA. March 1983. 39 pp. and appendices;
- (11) Fish and Wildlife Service. California Department of Fish and Game. California Waterfowl Association. Ducks Unlimited. 1990. Central Valley habitat joint venture implementation plan: a component of the North American waterfowl management plan. U.S. Department of the Interior, Portland, Oregon. February 1990. 102 pp.;
- (12) Fish and Wildlife Service. Canadian Wildlife Service. 1986. North American waterfowl management plan. Department of the Interior. May 1986. 19 pp.;
- (13) Fish and Wildlife Service. Undated. Fisheries USA: The recreational fisheries policy of the U.S. Fish and Wildlife Service. Washington, DC. 11 pp.;
- (14) Forest Service. 1995. Shasta-Trinity National Forest Land and Resource Management Plan. Department of Agriculture, Redding, CA. April 1995. 227 pp. and appendices;
- (15) Forest Service. 1992. Lassen National Forest Land and Resource Management Plan, including Record of Decision. Department of Agriculture, Susanville, CA, and appendices and maps; and
- (16) Forest Service. Bureau of Land Management. 1994. Standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Department of Agriculture, Washington, DC. April 13. 144 pp.

No conflicts were found with these plans.

5.6 Relationship of License Process to Laws and Policies

5.6.1 Section 401 of the Clean Water Act - Water Quality Certification

On October 4, 2001, PG&E applied to the SWRCB for water quality certification (WQC) for the Pit 3, 4, 5 Project, as required by Section 401 of the Clean Water Act. This request was received by the SWRCB on October 9, 2001. On September 18, 2002, PG&E withdrew and re-filed its request for WQC, and the SWRCB received this re-filed request on September 20, 2002. On September 5, 2003, PG&E again withdrew and re-filed its request for WQC, and the SWRCB received this re-filed request on September 8, 2003.

The SWRCB has not yet taken action on PG&E's request for WQC but would be required to do so by September 8, 2004, unless it is again withdrawn and refiled.

5.6.2 Section 18 of the Federal Power Act

Section 18 of the FPA states that the Commission shall require the construction, maintenance, and operation by a licensee of such fishways as the secretaries of Commerce and Interior may prescribe. By letter dated October 9, 2002, Interior reserved its authority to prescribe the construction, operation, and maintenance of such fishways as deemed necessary, including measures to determine, ensure, or improve the effectiveness of such fishways. The Secretary of Commerce did not file a fishway prescription or reserve its authority to prescribe fishways.

5.6.3 Section 4(e) of the Federal Power Act

Because the project occupies lands of the Shasta National Forest, the FS has authority to impose conditions under Section 4(e) of the FPA. The FS provided 27 final Section 4(e) conditions, 14 of which are standard license conditions and 13 of which are project specific conditions (letter from J. Gipsman, Attorney, U.S. Department of Agriculture, Office of General Counsel, Pacific Region, San Francisco, CA, to the Commission, dated November 14, 2003). We analyze these conditions, as appropriate, in section 3.3, *Proposed Action and Action Alternatives*.

5.6.4 Endangered Species Act

Section 7 of the ESA requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or cause the destruction or adverse modification of the critical habitat of such species.

The FWS indicates that four endangered or threatened species may be present in the general vicinity of the Pit 3, 4, 5 Project: bald eagle, northern spotted owl, VELB, and Shasta crayfish (letter from M.B. Hoover, Acting Field Supervisor, FWS, Sacramento, CA, to the Commission, dated June 21, 2002). Critical habitat for northern spotted owl borders the Pit 4 reach within the vicinity of the project, but no critical habitat has been designated in the project vicinity for any of the other species. Our analyses of project effects on these species are presented in section 3.3.4, *Threatened and Endangered Species*, and our final recommendations are presented in section 5.2, *Comprehensive Development and Recommended Alternative*. We conclude that relicensing the project would not affect the Shasta crayfish, and would not likely adversely affect the northern spotted owl or the VELB. We conclude that relicensing the project is likely to adversely affect the bald eagle.

The draft EIS served as our biological assessment of the effects of licensing the Pit 3, 4, 5 Project on endangered and threatened species. We sought concurrence with the FWS regarding our findings pertaining to Shasta crayfish, northern spotted owl and VELB, and requested formal consultation regarding the bald eagle by letter dated March 27, 2003. FWS concurred with our findings regarding Shasta crayfish, northern spotted owl, and VELB by letter dated April 25, 2003, as long as all protective measures described in the draft EIS for the northern spotted owl and VELB were implemented and enforced.

FWS issued its biological opinion regarding the bald eagle by letter dated October 15, 2003, stating that the proposed licensing of the project is not likely to jeopardize the continued existence of the bald eagle. The biological opinion included several terms and conditions which pertained to the following: (1) revisions to the existing Interagency Bald Eagle Management Plan (discussed in section 3.3.4.2, *Threatened and Endangered Species*); (2) development of a comprehensive water quality monitoring plan (discussed in section 3.3.1.2, *Water Resources*); (3) development of a fire management and response plan (discussed in section 3.3.6.2, *Land Use and Aesthetic Resources*); (4) provisions for consultation with the FWS pursuant to Section 7 if future Commission actions may affect listed species (discussed in section 3.3.4.2, *Threatened and Endangered Species*); and (5) assurance that any new owners of lands in the project area previously owned by PG&E, including holders of conservation easements, would agree in writing to abide by the terms and conditions of the biological opinion discussed in section 3.3.4.2, *Threatened and Endangered Species*). Our recommendations in this final EIS are consistent with three of these terms and conditions. We do not agree that a comprehensive water quality monitoring plan, as described in the biological opinion, is needed. We also do not agree that it is necessary for any new owners of project lands to agree in writing to abide by the terms of the biological opinion because there are existing standard conditions in place that ensure that all measures specified in a project license would be complied with regardless of the ownership of the land.

5.6.5 National Historic Preservation Act

Relicensing is considered an undertaking within Section 106 of the NHPA of 1966, as amended (P.L.89-665; 16 U.S.C.470). Section 106 requires that every federal agency “take into account” how each of its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American history, architecture, engineering, and culture that are eligible for inclusion in the National Register. As the lead federal agency for issuing a license, the Commission is responsible for ensuring that the licensee will take all necessary steps to “evaluate alternatives or modifications” that “would avoid, minimize, or mitigate any adverse effects on historic properties” for the term of the new license involving the project. The lead agency must also consult with the SHPO(s), as well as with

other land management agencies where the undertaking may have an effect, and with Indian tribes who may have cultural affiliations with affected properties involving the undertaking. The overall review process involving Section 106 is administered by the Advisory Council, an independent federal agency.

To meet the requirements of Section 106, the Commission will execute a PA for the protection of historic properties from the effects of the continued operation of the Pit 3, 4, 5 Project. The terms of the PA would ensure that PG&E would address and treat all historic properties identified within the project area through an HPMP. The HPMP entails ongoing consultation involving historic properties for the license term.

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**APPENDIX A
STAFF RESPONSE TO COMMENTS ON THE
PIT 3, 4, 5 HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

**APPENDIX A
STAFF RESPONSE TO COMMENTS ON THE
PIT 3, 4, 5 HYDROELECTRIC PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT**

The Federal Energy Regulatory Commission (Commission or FERC) issued its draft environmental impact statement (EIS) for the relicensing of the Pit 3, 4, 5 Project to the U.S. Environmental Protection Agency (EPA) on March 14, 2003, and EPA issued it on March 14, 2003. The Commission requested comments be filed by May 21, 2003. Subsequently, by notice dated, May 16, 2003, the Commission extended the comment period until June 20, 2003. The following entities filed comments pertaining to the draft EIS:

<u>Commenting Entities</u>	<u>Date of Letter</u>
Glenn Nader	April 1, 2003
Shasta County Board of Supervisors	April 8, 2003
Assemblyman Doug LaMalfa, California Legislature	April 9, 2003
U.S. Environmental Protection Agency (EPA)	May 9, 2003
Glenn Nader	May 9, 2003
Sid and Vaudine Cullins	May 12, 2003
Alturas Ranches, LLC	May 15, 2003
University of California Cooperative Extension at Alturas and Modoc County	May 16, 2003
U.S. Forest Service (FS)	May 19, 2003
California Department of Fish and Game (CDFG)	May 19, 2003
U.S. Department of the Interior (Interior)	May 20, 2003
Representative John Doolittle, U.S. Congress	May 20, 2003
Senator Sam Aanestad, California State Senate	May 21, 2003
California Department of Parks and Recreation (CDPR)	June 9, 2003
Modoc County Board of Supervisors	June 17, 2003
Pit River Tribe (Tribe)	June 18, 2003
American Whitewater Affiliation, Shasta Paddlers, & Chico Paddleheads (Boating Groups)	June 18, 2003
Pit River Watershed Alliance	June 19, 2003
Northern California Council of the Federation of Fly Fishers (Fly Fishers)	June 19, 2003
Pacific Gas and Electric Company (PG&E)	June 19, 2003
California Trout and Trout Unlimited (CalTrout and TU)	June 20, 2003
National Marine Fisheries Service (NMFS)	June 20, 2003
State Water Resources Control Board (SWRCB)	June 20, 2003

<u>Commenting Entities</u>	<u>Date of Letter</u>
South Fork Irrigation District (SFID) and the County of Modoc	June 20, 2003
California Department of Fish and Game (CDFG)	July 15, 2003
South Fork Irrigation District (SFID) and the County of Modoc	July 21, 2003

In this appendix, we summarize the comments received, provide responses to those comments, and indicate where we have modified the text of the EIS. We have grouped the comments by topic.

General and Procedural

Comment: The Tribe objects to the burdens placed on the Tribe to develop mitigation measures and requests that the Commission intervene and assert jurisdiction when and if PG&E fails to take satisfactory mitigation measures.

Response: One purpose of the Commission’s NEPA process is to provide a basis for development of appropriate protection, mitigation, and enhancement (PM&E) measures for the relicensing of this project. This final EIS documents the basis for our recommended PM&E measures. The Commission would make its final determination regarding the PM&E measures that should be included in any new license that may be issued for this project in the order pertaining to this proceeding. Compliance with the conditions of any such order is within the jurisdiction of the Commission and if the licensee fails to implement the conditions in a satisfactory manner, the Commission would require corrective actions and possibly impose penalties.

Comment: Interior comments that the final EIS should reflect the scope of the PRCT planning process and suggests that the second sentence of paragraph 5 on page iii be revised to include the key issue, “establishment of an appropriate minimum instream flow regime in the bypassed reaches to maintain sustainable ecosystem functions and to protect, mitigate and enhance fish and wildlife resources, including special status species (i.e., bald eagle, foothill yellow-legged frog), while balancing measures to enhance recreation use and minimize effects to sensitive cultural resources.”

Response: We have modified the referenced sentence to read as follows: “Key issues associated with relicensing this project are establishing an appropriate flow regime in the bypassed reaches to maintain sustainable ecosystem functions and to protect and enhance fish and wildlife resources, including special status species (i.e., bald eagle and foothill yellow-legged frog), while balancing measures to enhance recreational use and minimize effects on sensitive cultural resources and energy production.”

Comment: The FS comments that on page 133 of the draft EIS “text flows” should read “test flows.”

Response: We have made this edit to the text of the final EIS.

Cumulative Effects

Comment: EPA comments that the final EIS should provide a more substantive discussion of and quantify, where possible, the cumulative effect of the project when considered with other past, present, or reasonably foreseeable projects, regardless of what agency or person undertakes those actions. EPA also comments that the final EIS should expand the discussion of cumulative effects to include impacts on water quality and cultural resources and any other regionally sensitive resources that have been, or would likely be degraded by this and other projects in the region.

Response: We identified resources that could be cumulatively affected by the relicensing of this project (water quantity, rainbow trout, and bald eagles) in section V.B, *Scope of Cumulative Impact Analysis*, of the draft EIS. We discussed and quantified, to the extent that data is available, the cumulative effects on these resources in sections V.C.1.b, *Water Resources, Water Use*, V.C.2.c, *Aquatic Resources, Cumulative effects on rainbow trout*, and V.C.4.c, *Threatened and Endangered Species, Cumulative effects on bald eagles*, of the draft EIS. We consider the potential effects on water quality to be a site-specific rather than cumulative effect, even though the effect may extend beyond the project boundary. Similarly, the defined Area of Potential Effects (APE) for cultural resources is intended to encompass the area that may be influenced by the relicensing of this project. Although we consider these effects to be specific to the relicensing of this project, our recommended Historic Properties Management Plan (HPMP)¹ would encompass cultural resources within the entire APE, not just the area within the project boundary.

Water Resources

Comment: PG&E supports erosion and sediment control measures as an element in planning any ground disturbing activity and such measures are included in the cultural

¹ Throughout much of this proceeding, we, and numerous other parties, have referred to this as a Cultural Resource Management Plan (CRMP). To be consistent with current Commission practice, we now refer to this as an HPMP throughout the remainder of Appendix A, regardless of what we or other parties may have called it in the past. We consider both naming conventions to be synonymous.

resources management plan, recreation site plans, and the road and spoil pile management plan. PG&E comments that the development of a separate erosion and sedimentation plan is redundant and unnecessary.

Response: We concur that most of the soil erosion and sediment control measures would be elements in other plans. However, as we noted on page 89 of the draft EIS, there are some erodible sites along the shoreline of Lake Britton that would not be covered by other specific plans. We conclude that monitoring of such sites is warranted and if active erosion is evident, consideration should be given to whether or not implementation of stabilization measures is appropriate. Our recommended erosion and sedimentation control plan would, by definition, only apply to those sites not covered by other plans and would therefore not be redundant.

Comment: EPA comments that the draft EIS does not provide a discussion of the applicability of CWA Section 404 and the Rivers and Harbors Appropriation Act Section 10 to project operations and maintenance. EPA comments that the final EIS should include such a discussion including potential dredging activities. Additionally, EPA comments that the final EIS should clearly identify the potential environmental impacts from dredging activities, discuss the permit requirements under these statutes, and the role of the Corps and EPA in implementing these programs. PG&E is not opposed to developing a dredging plan should dredging in project waters be needed.

Response: PG&E does not propose any dredging as part of this relicensing proceeding. However, it is possible that dredging in project waters could be necessary sometime during the term of any license that may be issued for this project. As we stated on page 93 of the draft EIS, to date there has been one necessary dredging operation. If dredging should be deemed necessary during the term of the license, we recommend that PG&E develop a dredging plan that is approved by resource agencies prior to implementation of dredging. We specify the elements that should be included in the dredging plan, but potential environmental effects would depend on the scale, extent, and location of the proposed dredging operation and therefore not appropriately addressed in this EIS. Licensees are not excused from obtaining other necessary authorizations should the need arise, and in this case, if dredging in project waters are determined to be necessary, PG&E may be required to file a dredge and fill application with the Corps, in addition to our recommended dredging plan. We have modified our recommendation in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, to add the Corps and the EPA to the consulted entities in the development of the dredging plan.

Comment: The FS comments that the statement on page 36 of the draft EIS, "Typical Lake Britton drawdown due to peaking operations is 3 to 6 feet per day" should read "per week" since Lake Britton fluctuates on a weekly basis.

Response: We agree and have made the appropriate correction to section 3.3.1.1, *Water Resources*, of the final EIS.

Comment: The FS and Interior agree that 150 cfs flows improve water quality at Lake Britton. However, the FS comments that it has not eliminated persistent algal bloom situations. SWRCB comments that the draft EIS fails to disclose past algal blooms in Lake Britton. SWRCB comments that the EIS should disclose the occurrence of algal blooms and their impact on recreational use, water quality, and bald eagle foraging.

Response: We disclosed on page 61 of the draft EIS that, although the frequency of algal blooms has been reduced, they have not been eliminated. We added information provided by SWRCB regarding the nuisance algal bloom that occurred during August 2002 to section 3.3.1.1, *Water Resources*, of the final EIS. However, observations by FS staff indicate that this bloom was associated with periods when the air temperature exceeded 100 degrees F for a number of days. We reviewed air temperature data from July 1948 through July 2003 collected at Burney, California, which is available on the Western Regional Climate Center's web page.² July and August 2002 represented a period of record warmth in the Burney area, with the highest temperature recorded during the period of record (108 degrees F) occurring on July 12, 2002. Daily record warm temperatures were set on July 10 (102 degrees F), July 11 (106 degrees F), August 14 (103 degrees F), August 15 (100 degrees F) and August 16 (100 degrees F). The average maximum temperature in July is 87.7 degrees F and in August, 86.5 degrees F. We conclude that the conditions that lead to the July and August algal blooms are not representative of typical conditions in the Lake Britton area.

PG&E's water quality monitoring was not designed to quantify the frequency and duration of algal blooms in Lake Britton, but the routine water quality monitoring showed that water transparency increased while nutrient and chlorophyll *a* concentrations decreased over the last 10 years. Increased water transparency and decreased chlorophyll *a* concentrations both suggest decreased abundance of planktonic algae over the 10-year period, which may be due to the observed reduction in nutrient concentration. Algal blooms are likely caused by nutrients from upstream, non-project related municipal and agricultural sources. The influence of algal blooms on recreational use is subjective, but we acknowledge that most persons would likely prefer recreating at Lake Britton in the absence of algal blooms. The observations of FS staff during August 2002, forwarded by SWRCB, substantiate the negative aspects of algal blooms to recreationists.

²

<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?caburn+nca>

Bald eagles are known to be highly opportunistic, and may alter their foraging patterns, including the hunting techniques they employ, the prey items they select, and foraging locations, depending on a variety of factors, such as weather, water depth, ice cover, wave action, prey abundance and availability, and disturbance (Johnsgard, 1990). Presumably, visibility through the water column could similarly affect foraging patterns, but we have no information to indicate that affects of algal blooms would be negative. Visibility through the water column may also effect fish populations and behavior. Algal blooms can provide additional food resources for some species, good hiding cover for some predators, and can modify social interactions that in turn affect densities. Thus, effects on fish could indirectly affect bald eagles. Again, we have no information to indicate that such effects would be negative.

Comment: Interior comments that the draft EIS fails to demonstrate how increased flows as proposed by Interior and other resource agencies would affect Lake Britton and water quality conditions in the project's bypassed reaches. The final EIS should provide a qualitative and quantitative discussion of the effect of resource agency proposed flows on water quality for fish and aquatic organisms.

Response: The primary effect of the agencies recommended flow regimes are discussed on pages 119 of the draft EIS, with figures showing the influence of various flows on the temperature regime in the bypassed reaches on pages 120 and 121 of the draft EIS. Any increase in the minimum flows to the Pit 3 bypassed reach would be diverted from generation (less flow would enter the Pit 3 powerhouse intake and more flow would be released at the dam). The same volume of water would pass through Lake Britton, so there should be little discernable change to the water quality of Lake Britton. We now recommend that PG&E include periodic vertical temperature and DO profile monitoring near the Pit 3 dam in the water temperature and DO monitoring plan, which would document changes that may occur under the new flow regime.

Comment: Interior comments that the draft EIS indicates evidence of project-related water quality problems and implementation of a water quality monitoring plan would ensure that state water quality standards are met. Interior agrees with the draft EIS that project-related activities may influence water quality, but Interior believes it is more appropriate to address water quality conditions in a single plan, rather than multiple more focused plans as suggested in the draft EIS.

Response: We agree that a single plan to address water temperature and DO monitoring is appropriate, and we continue to recommend such a plan. We consider it more appropriate to specify other water quality monitoring in the specific project-related plans that have the potential to influence water quality, rather than in a single water quality monitoring plan, because the extent, timing, and parameters to be measured would vary by the type of

proposed activity. For example, where only earth disturbing activity near project waters is proposed (e.g., during the construction of a recreational enhancement), it may be appropriate to only monitor turbidity of nearby project waters during and immediately after such earth disturbing activities to determine whether erosion and sedimentation control measures are effective. On the other hand, it may be appropriate to monitor petroleum hydrocarbons in waterways adjacent to project roads during certain maintenance activities (e.g., resurfacing or widening project roads). The location of monitoring stations would be dependent on the location of the maintenance work. By linking water quality monitoring to specific plans, we conclude that it would more effectively document consistency with state water quality standards and better enable corrective actions to be taken, if necessary.

Comment: Interior comments that the draft EIS does not recommend adopting the Interior recommendation to implement a water quality monitoring plan to ensure that state water quality standards for DO, BOD, turbidity, conductivity, and pH are being met. Interior comments that the analyses made in the draft EIS are subjective and based on incomplete information.

Response: As indicated in table 12 of the draft EIS, nearly all measured DO values at riverine stations met state water quality standards. Most measurements that were below 7.0 mg/l or 85 percent saturation were from water that is not influenced by project operations. Low DO readings within the hypolimnion of Lake Britton are typical of stratified deep reservoirs and natural lakes. Our review of table 12 leads us to conclude that these low DO values in the reservoir are typically not propagated downstream within the project bypassed reaches. However, our recommended temperature monitoring plan, discussed on pages 84 and 85 of the draft EIS, also provides for monitoring of DO at certain times of the year. General project operations do not have the ability to affect pH or conductivity and, therefore, we do not recommend monitoring of these parameters. We recommend that indicators of erosion such as turbidity monitoring be included as site specific elements of our other recommended plans that could entail earth disturbing activities (See our previous comment response.). Although high BOD is the likely cause of the relatively low DO levels in the deep portions of Lake Britton, we do not conclude that monitoring of this parameter is needed because project operations under a new license are not likely to influence BOD.

Comment: EPA comments that the final EIS should include further information on the requirements of the water quality monitoring plan, including clearly stating how the Commission staff would ensure that water quality management procedures would be implemented over the life of the license and how violations would be corrected and mitigated. EPA also comments that they should be included as a consulting agency on the plan.

Response: As previously discussed, with the exception of our recommended temperature and DO monitoring plan, our recommendation is to include water quality monitoring, as appropriate, as a site specific element of the various other plans that we recommend. The purpose of any water quality monitoring would be to ensure that applicable water quality standards are met. Based on the information that we have reviewed, we see no evidence that routine project operations are resulting in water quality standard violations. We expect that sufficient site-specific measures to prevent water quality degradation would be included in the development of the individual plans that we recommend. These plans would be developed in consultation with appropriate resource agencies. We therefore view water quality monitoring as a means to verify compliance with applicable water quality standards rather than a means to detect violations. Should water quality standard violations be documented, we would, of course, expect corrective actions to be taken. However, it would be impossible to speculate at this time how any violations would be corrected, because it would depend on the nature of the violation. The one exception could be in maintaining water temperature below 20 degrees C. Our recommended water temperature and DO monitoring plan would require PG&E to identify in this plan potential operational procedures that could be taken to maintain project waters, as we indicated on page 85 of the draft EIS. Based on EPA's request, we have added them as a consulted agency in the development of this plan and have modified section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS accordingly.

Comment: Interior comments that the final EIS should present scientific and technical basis to support the implication that aquatic biota have not been adversely affected by local reductions in DO or temperature in project-influenced waters. Interior states that this issue would be best addressed with a comprehensive water quality monitoring plan as recommended by Interior.

Response: Sampling by PG&E during June, July, August, and September of 1999 and 2000 indicated only one DO reading below the standard of 7.0 mg/l. This one value (6.5 mg/l) was recorded just downstream of the Pit 3 powerhouse on July 28, 2000. There have been no documented adverse effects on aquatic biota in project waters because of project-related temperature or DO changes. DO both within the Pit 3 bypassed reach and all other locations were above 8 mg/l on the same day (see table 12 of the draft EIS). DO measurements below 7.0 mg/l did occur in Lake Britton during typical summer stratification, but this was not propagated downstream other than on the July 28, 2000, sampling date. Project operations do affect water temperature and, therefore, we recommend a water temperature and DO monitoring plan, as discussed on pages 84 and 85 of the draft EIS. Interior presents no evidence as to why a more comprehensive water quality monitoring plan is warranted. In its Biological Opinion for this proceeding, filed with the Commission by letter dated October 15, 2003, FWS discusses the adverse impacts of mercury on the ecosystem, and includes condition 2.B in its incidental take statement

that its recommended water quality monitoring plan be designed to adequately characterize areas of methylmercury production as well as mercury loading in the ecosystem. We conclude that the presence of mercury in the ecosystem is not related to project operations and should therefore not be PG&E's responsibility to quantify (see the discussion of water quality monitoring in the Section 10(j)/FS clarification meeting summary, issued by the Commission on September 22, 2003).

Comment: The FS comments that contrary to the draft EIS, some monitoring for coliform, pH, and conductivity would be warranted given the potential for an increase in dispersed recreation use along the Pit 3, 4, and 5 reaches and Lake Britton.

Response: We acknowledge that during the term of any new license that may be issued for this project there is potential for an increase in dispersed recreation along the project bypassed reaches. Our response to this expectation is to recommend that PG&E provide sanitary facilities at appropriate locations in proximity to each reach. Details of these types of recreation-related measures would be specified in our recommended Recreation Management Plan. Depending on the type of sanitary facilities that are installed, it may be appropriate to monitor coliform in adjacent project waters to ensure that the facilities are operating as intended. Such monitoring would be specified in the recreation management plan. Monitoring coliform throughout project-affected waters could serve to document whether or not the public is using the available sanitary facilities, but we conclude that PG&E does not have the ability to control public hygiene issues along the bypassed reaches and that such issues are not project-related. As previously discussed, we continue to conclude in the our EIS that general project operations do not have the ability to influence conductivity or pH and therefore, we would have no basis to require that PG&E monitor these parameters.

Comment: SWRCB comments that the draft EIS recommends that PG&E develop a water temperature monitoring plan and conduct spot sampling for DO during certain conditions. SWRCB comments that the our proposed level of monitoring may not be adequate to demonstrate compliance with the Clean Water Act.

Response: As indicated on page 85 of the draft EIS, the frequency and other details of temperature and DO monitoring would be specified in our recommended plan. We recommend that this plan be developed in consultation with several agencies, including SWRCB. Consequently, we expect that the resultant temperature and DO monitoring plan that is filed with the Commission for approval should be sufficient to document compliance with applicable water quality standards. Similarly, on page 227 of the draft EIS, we include SWRCB among the consulted parties in the development of the recreation management plan, thus providing an opportunity to ensure that adequate water quality monitoring is including during development of recreation facilities. In the draft EIS, we

inadvertently did not include SWRCB as a consulted entity in the road and facilities management plan. We modified section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS to add the SWRCB to the list of consulted entities during the development of the road and facilities maintenance plan. Therefore, SWRCB should be able to provide input on what types of water quality monitoring should be incorporated into the development of this plan.

Comment: CalTrout and TU support the development and implementation of a water temperature and maintenance plan and comment that the water quality monitoring plan be folded into the broader Adaptive Management Plan. CalTrout and TU further comment that the water quality plan should include a schedule for installation of temperature monitoring equipment; and procedures that would be followed to report the results of monitoring to the resource agencies and the Commission and all draft EIS proposed plans should include similar milestone/implementation schedule and reporting process requirements. PG&E comments that if a temperature maintenance plan is ultimately required, it should be specific in terms of what water temperatures are to be maintained, what purpose the monitoring would serve so that monitoring of the intended result can be performed, what species is intended to benefit from the temperature regime, and what disadvantages may be created for other species, so that they can comply.

Response: We agree with CalTrout and TU that the results of our recommended water temperature monitoring would be helpful in interpreting the biological responses to project operations under a new license that may be issued for this project. Similarly, the results of our recommended flow monitoring would also serve as a useful tool for interpreting the biological responses to new operating conditions. Our recommended biological monitoring and adaptive management plan is designed to establish a process by which population monitoring may trigger adjustments to either the monitoring or project operations. We include most of the other provisions requested by CalTrout, TU, and PG&E for the temperature monitoring plan on page 85 of the draft EIS. We generally provide similar provisions for the other plans that we recommend elsewhere in the EIS, although the specific details about plan content are typically reserved for the license order conditions. As noted on page 43 of the draft EIS, the designated beneficial uses of the Pit River include both warm and cold freshwater habitat. In such cases, coldwater criteria apply, which is to maintain water temperatures at or below 20 degrees C, to the extent within the control of PG&E. The specific species that would be targeted by this temperature regime is rainbow trout. Our recommended biological monitoring would provide a basis for assessing the response of other species to this temperature.

Comment: The following entities expressed concerns about any new flow regime that would increase flows in the project bypassed reaches on the upstream water supply and the resultant environmental and socioeconomic effects if increased flows at the Pit 3, 4, 5

Project are drawn from upstream sources rather than being diverted from generation: Senator Sam Aanestad, Shasta County Board of Supervisors, Modoc County Board of Supervisors, Assemblyman Doug La Malfa, Representative John Doolittle, Pit River Watershed Alliance, SFID, the FS, the University of California Cooperative Extension at Alturas/Modoc County, Alturas Ranches LLC, Sid and Vaudine Cullins, and Glenn Nader.

Response: PG&E filed, by letter dated October 29, 2003, the PRCT agreement on proposed PM&E measures pertaining to the project flow regime that was reached by members of the PRCT. Signatory parties of this agreement include representatives of upstream water users (Modoc County, SFID, and Iverson Reservoir) and agencies that expressed concerns regarding the ramifications of a new flow regime on upstream water users (the FS, FWS, and CDFG). PG&E informed the Commission that it has withdrawn its existing complaints against upstream junior water rights holders that had been filed with the SWRCB (letter dated February 12, 2004), and reached agreements with those parties that would enable upstream diversions to continue as they have occurred in the past (letter dated February 13, 2004).

Comment: CalTrout, TU, and Fly Fishers comment that it is not the future flow regime itself that would cause adverse harm, but PG&E's actions subsequent to a future flow regime that raise the possibility of impact.

Response: See our response to the previous comment. CalTrout and TU are both signatory parties to the PRCT agreement on the project flow regime.

Comment: CDFG concludes that with increased minimum flows, ranchers would actually face no impact in most years, but substantial water shortages in dry years. In these dry years, new instream flow requirements would make little or no difference in the number of spill days or amount of water diverted. CDFG states that drought, not increased flow requirements, poses a far greater threat to the region's agricultural economy. Finally, CDFG notes that their objective is to develop a mutually acceptable solution to the upstream water supply issue and they intend to pursue this objective through collaborative discussions that rely on the best possible information.

Response: See our response to the previous comments. CDFG is a signatory party to the PRCT agreement on the project flow regime.

Comment: SWRCB, CalTrout, and TU agree with the conclusion in the draft EIS that determinations of water use and water rights for either agriculture or power generation is a matter for the state. SFID and Modoc County, in its July 21, 2003, letter to the Commission, disagree with this conclusion, stating that it is the Commission's responsibility, under the FPA and NEPA, to ensure that licensing a project is best adapted

for beneficial public uses, which includes irrigation and water supply.

Response: See our response to the previous comment. CalTrout, TU, SFID, and Modoc County are all signatory parties to the PRCT agreement on the project flow regime. The Commission will continue to ensure that the project is best adapted for beneficial public uses of project waters.

Comment: CalTrout and TU comment that the SWRCB should be added to the list of consulting agencies for the development of a flow and water level monitoring plan and that a feasibility analysis of developing a Lake Britton inflow and reservoir monitoring system for purposes of better understanding the relationship between Project operations and upstream interests be added as a component.

Response: SWRCB did not ask to be included among the consulted agencies in the development of our recommended flow and water level monitoring plan. We recommended that PG&E consult with the FS, FWS, CDFG, and USGS during the development of the flow and water level monitoring plan. Although we considered this consultation to be sufficient to enable development of a solid plan to monitor compliance with flow and water level provisions of a new license, we have no objection if the SWRCB is consulted during the preparation of this plan and in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS have added this agency as a consulted entity. Inflow from the Pit River into Lake Britton is already monitored by a USGS gage near Highway 299. We do not see the need to conduct a feasibility analysis for developing a Lake Britton inflow and reservoir monitoring system.

Comment: PG&E agrees with our recommendation to develop and implement a stream flow and water surface monitoring plan, but wishes to make the distinction that flow monitoring ensures measurement of the prescribed stream flows and reservoir elevations, whereas flow shaping originates from ecological needs and is codified in stream flow and reservoir operation.

Response: Our recommended flow and water surface monitoring plan would need to account for seasonal variability, such as that associated with flow shaping, that may be included as a condition of any license that may be issued for this project so that compliance with the specified flow regime could be documented.

Comment: CalTrout and TU ask whether the model discussed in table 22 of the draft EIS would be entered into the record and comment that the basis for concluding on page 82 of the draft EIS that spillage would most likely occur less frequently with higher minimum flows should be provided. CalTrout and TU also question whether the conclusion that higher minimum flow means less frequent spillage is consistent with the draft EIS

assumption on page 80 of the draft EIS that to meet minimum flow requirements, PG&E would utilize the same quantity of inflow, but reduce generation flows by the amount necessary to meet the new requirements.

Response: We describe the hydrologic model that we use in our responses to comments on our developmental analysis. In response to CalTrout and TU's comment, we modified the text of the sentence in question to read: "However, with the higher minimum flows originally recommended by the FS, Interior, and CDFG, spillage could occur less frequently at the Pit 3 dam." Without knowing how PG&E would implement a regime with higher flows, we cannot conclude that higher minimum flows would result in less spillage at the Pit 3 dam. Implementation of the operating protocol specified in the PRCT agreement would result in a slight increase in the frequency and duration of spillage. We made no assumption on page 80 of the draft EIS that PG&E would use the same quantity of inflow but reduce generation flows by the amount necessary to meet the new flow requirements. There are several options available to PG&E to meet increased flow requirements to the project bypassed reaches and on page 80, we listed these options.

Aquatic Resources

Comment: The FS, CDFG, and the Tribe comment that some of the data relied on by the Commission staff in the draft EIS, such as the 1984 IFIM data, has since been shown to be incorrect. CDFG comments that the few studies finalized prior to the draft EIS lack perspective. The FS comments that PG&E recalculated this data and provided the new results after completion of the draft EIS. Appendix A-3 of the FS submittal includes comments on this data set and other asserted errors. The FS, CDFG, and the Tribe recommend that the newly available information be analyzed in the final EIS.

Response: We do not agree that the 1984 IFIM data has been shown to be incorrect. Our review of the results of the re-analysis of the data collected for the 1984 IFIM using current techniques reveals different results, but many of the relationships between flow and habitat are the same. Different modeling results does not mean that one analysis is correct and the other incorrect. We consider all available habitat modeling results in our analysis of flow and aquatic habitat in the final EIS.

Comment: EPA, SWRCB, and the Pit River Tribe comment that the final EIS should incorporate the results of the ongoing minimum flow studies into the minimum flow analysis. CalTrout, TU, and Fly Fishers comment that reliance on the 1985 PG&E Instream Flow Study is inappropriate considering recently released results of the three flow studies conducted in 2002 focused on how fish habitat changes with discharge including: 1) reanalysis of the 1984 study; 2) limited 2-D hydraulic modeling; and 3) habitat mapping during demonstration flows. CalTrout and TU comment that we should give adequate

weight to the reanalysis and reconsider our recommended minimum instream flow regimes for the three bypassed reaches. CalTrout and TU recommend minimum summer flows from late May through October of 200 cfs in Pit 3 bypass reach and 350 cfs in the Pit 4 and Pit 5 bypass reaches based on their preliminary analysis of the flow-habitat relationship studies. Fly Fishers endorse comments submitted by CalTrout and TU and comments that new data must be fully considered prior to determining final license conditions. CDFG, Interior, and the FS stated that they intend to revise their flow recommendations and conditions once they have received and analyzed the complete set of flow-related studies (CDFG, FWS, and the FS are signatory parties to the PRCT agreement, which includes a flow regime agreed to by the signatory parties.).

Response: See our response to the previous comment.

Comment: The FS comments that they would like to clarify that their flow condition was originally and continues to be a “flow shaping” condition with the 400 and 450 cfs proposed flows being interim measures for the Pit 3 and 4 reaches. These static flows would be replaced with variable “shaped” flows, dependent on time of year and water year type, following finalization of their 4(e) conditions based on their review of data and analysis that was not yet available when the FS comment letter was submitted (May 19, 2003) and the FS provides additional information on shaped flows in Appendices A-3 and D-4 of their comments. Subsequent to filing its comments on the draft EIS, the FS submitted its final 4(e) conditions to the Commission by letter dated November 14, 2003. CalTrout, TU, and Fly Fishers suggest that our recommendations be revised to recognize the natural variability of river flow and explicitly incorporate the five components of the natural flow regime (timing, duration, magnitude, frequency, and rate of change) into a broader framework for ecosystem management.

Response: Table 27 (page 112) of the draft EIS indicates in footnote “e” that although presented as static minimum flow recommendations for each bypassed reach, the FS planned to provide its flow recommendations in the form of “shaped flows” at a later time. The flow regime specified in the FS final 4(e) conditions is consistent with that filed by PG&E on October 29, 2003, transmitting the PRCT agreement on the project flow regime. Our analysis of the flow regimes in all three bypassed reaches in the final EIS takes into account all information that has been filed to date, including agreements that have been reached by the stakeholders.

Comment: CDFG comments that the underlying objective of their 10(j) flow regime proposal was not accurately addressed in the draft EIS. CDFG supports implementation of a flow regime with seasonal variation patterned after the unimpaired hydrograph. CalTrout, TU, and Fly Fishers agree that the minimum instream flow objective is to implement a flow regime with seasonal variability based on the unimpaired hydrograph. CDFG concurs with

the approach to distinguish between the three reaches and their final recommendation would feature three distinct flow regimes. CDFG is also concerned that on page 11 of the draft EIS, flow shaping is presented as a potential measure rather than a foundation for the recommended flow regime. CalTrout and TU also comment that flow shaping should not be merely a feasibility assessment but flow shaping and management should be implemented as a component of the water level monitoring plan. PG&E comments that depending on the stream flows in the new license, it could take up to four years to design and construct a new structure at Pit 3 dam that can comply with new instream flow requirements.

Response: Our analysis of the flow regimes in all three bypassed reaches in the final EIS takes into account all information that has been filed to date, including agreements that have been reached by the stakeholders. If major structural modifications should be needed to implement the flow regime that is specified in any license that may be issued for this project, the Commission may specify in the license order that the licensee make a good faith effort to provide the specified flows until the needed modifications are completed. Such a "good faith" clause is included in the PRCT agreement submitted to the Commission by letter dated October 29, 2003.

Comment: SWRCB, AWA, Shasta Paddlers, and Chico Paddleheads comment that they have reservations regarding the completeness of the environmental analysis contained in the draft EIS, since it was released prior to the completion of flow related studies. SWRCB, AWA, Shasta Paddlers, and Chico Paddleheads comment that the Commission should issue a supplemental draft EIS that incorporates information from the recently completed studies, since the new information is significant and should be disclosed and analyzed for public review, not just included in the final EIS.

Response: Our analysis of the flow regimes in all three bypassed reaches in the final EIS takes into account all information that has been filed to date, including new flow study results and agreements that have been reached by the stakeholders. Although the Commission does not intend to issue a supplemental draft EIS, if stakeholders chose to submit comments on the final EIS, such comments would be considered during the preparation of the Commission's order pertaining to this proceeding.

Comment: The FS agrees that the agency-proposed flow increases would have both beneficial and adverse effects on species and other conditions and the components of the FS's flow regime are intended to maximize habitat for some species, while adversely affecting species which are non-native, or have proliferated as a result of project operations and which are adversely affecting species that the FS is directed to protect.

Response: The results of the instream flow, habitat mapping, and temperature modeling studies indicate that there is no single flow or flow regime that would optimize habitat for

all native species of interest and reduce or control non-native species. We do not believe that the higher minimum flows or the freshet flows proposed by the agencies would have a substantial effect on the population levels or distribution of the primary non-native species of concern (signal crayfish and bullfrogs), as these species have persisted in the project area despite the occurrence of record high flow events in 1997 and 1998.

Comment: The FS comments that we should remove the statement, “Tennant Method has limited value for establishing minimum flows in the Pit River,” should acknowledge the perspective that the Tennant Method provides, and state that the more detailed studies conducted in 2002 and reanalysis of previous studies allow a more detailed analysis of Pit River instream flows than the more general Tennant Method. The FS comments that they did not heavily rely on the Tennant method as might be implied, but rather used it to provide perspective to the general magnitude of flows presently occurring and proposed.

Response: The Tennant method is most commonly used for developing instream flow recommendations in situations where site-specific information is lacking. In the case of the reaches of the Pit River affected by this project, there is detailed information available on the effects of flow on fish habitat including both 1-D and 2-D IFIM studies, habitat mapping, time-series analysis, and water temperature modeling. Furthermore, flows in the bypassed reaches are restricted to a relatively confined, high-gradient channel with site-specific factors that would cause water velocities to increase rapidly at higher flows, which are not accounted for in the Tennant method. Given the abundance of site-specific data that is now available, we maintain that the Tennant method, although perhaps providing general perspective, has limited value for establishing minimum flows in the Pit River, and that it is appropriate that we focus our analysis on site-specific information.

Comment: CDFG comments that the current diversity and relative health of the Pit River is indicative of the great potential for enhancement within this system and CDFG considers the current trout fishery to exist in spite of current project operations. CDFG comments that there is no basis for the assumption that the current flow levels (150 cfs in Pit 3, 150 cfs in Pit 4, and 100 cfs in Pit 5) have created a fishery anywhere near optimal for this section of the Pit River.

Response: Until existing flow regimes are modified, the only basis that we or any other stakeholder has for assessing whether or not the current flow regime is optimal for aquatic biota is by using modeling and considering the results of representative field observations. We used available information for our analysis in the draft and final EIS. As noted in a previous response, we conclude there is no flow regime that would provide optimal habitat for all native aquatic species of interest in project waters. Our recommended aquatic biota monitoring and provisions for adaptively managing project operations based on the results of the monitoring would provide a measure of whether the flow regime in any new license

that may be issued is enhancing the monitored populations as predicted by analysis of model results and field observations.

Comment: CDFG comments that they do not have a management plan for the Pit River fishery and applied the Hat Creek Wild Trout Management Area catch rate as a reasonable objective for wild trout in the Pit 3 portion of the project. CDFG comments that catch rate is only one of six management objectives that CDFG considers applicable to Lake Britton and Pit River fisheries and CDFG is concerned that the other five objectives, which include a healthy and diverse native coldwater fishery, do not receive enough weight in the draft EIS

Response: In section V.C.2, *Aquatic Resources*, of the draft EIS, we considered the effects of alternative flow regimes on the habitat conditions for various lifestages and species of fish and sensitive molluscs. We also addressed issues pertaining to CDFG management objectives relating to public access, the warmwater fishery in Lake Britton, and protecting the native trout fishery in lower Hat Creek.

Comment: CDFG and Interior comment that they do not concur with the conclusion that higher flows would necessarily thwart the catch rate objective. CDFG and Interior maintain that higher flows would provide additional and suitable habitat for fish and aquatic organisms and a flow regime that provides optimal trout habitat conditions would translate into a satisfactory catch rate. The FS states that the improved fish habitat provided by higher flows would benefit both fish and ultimately the angler.

Response: We concluded in the draft EIS that the flows recommended by resource agencies would enhance habitat for adult rainbow trout, but at the expense of angler access. We now conclude in the final EIS that the flows proposed in the PRCT agreement during the angling season would enhance habitat more than the flow regime we recommended in the draft EIS, but still provide a reasonable degree of angler access. Anglers would still be able to cross the stream at selected locations, especially in the Pit 3 bypassed reach, which receives 60 percent of the day use activity in the project-affected Pit River Canyon (downstream of Lake Britton). We have modified the text of section 3.3.2.2, *Aquatic Resources*, of the final EIS accordingly. Also, see our response to the following comment.

Comment: The FS, CDFG, and Interior comment that the draft EIS places too much emphasis on wadeability. Although they acknowledge that the number of safely wadeable locations would decrease with increasing flows, they contend that anglers would adapt to a new flow regime. Interior states that higher flows would not prevent anglers from participating in angling activities, wading along the river's edge, and crossing the river by alternative means or at alternative sites.

Response: We agree that in reaches that remain accessible, anglers would most likely adapt to the prevailing higher flow conditions. However, our contention is that higher flows that prevent anglers from crossing the river would preclude fishing at many locations along the bypassed reaches that are currently accessible, because slopes on one side of the river are often too steep to allow safe pedestrian passage either upstream or downstream of such locations. Such barriers to anglers would not necessarily prevent anglers from fishing, but the density of anglers in the remaining accessible reaches would most likely be greater than under current conditions. Our recommended angler surveys should enable changes in angler use under a new flow regime to be quantified.

Comment: The FS states that cost/benefit issues (cost of habitat versus relative gain) related to increasing flows should be articulated in the draft EIS.

Response: We evaluated the benefits of agency-proposed minimum flow regimes in sections V.C.2.b, *Aquatic Resources* and V.C.2.b, *Terrestrial Resources*, specified the costs of these measures in section VI.B, *Developmental Analysis*, and discussed flow-related resource tradeoffs in section VIII, *Recommendations of Fish and Wildlife Agencies*, of the draft EIS.

Comment: The FS comments that the CDFG data presented in table 25 indicates a perceptible decline in angler success, which conflicts with the draft EIS statement that CDFG data indicates that catch rates have not declined.

Response: As we noted on page 102 of the draft EIS, PG&E's survey results indicate that catch rates have declined in the Pit 3 reach, a trend that PG&E suggests may be related to fish avoidance of anglers as a result of more fish being released every year due to the restricted harvest and gear limitations. We maintain, however, that this decline is not evident in the CDFG data that we summarized in table 25. In fact, the highest catch rates reported by CDFG occurred in three of the last four years (out of a total of seven years) of survey data that are presented in the table. We see no indication of a downward trend in the CDFG catch rate data.

Comment: Interior comments that the draft EIS conclusion that "the current flow regime supports one of the best trout fisheries in California" is qualitative and not supported by technical information.

Response: Figure 5 in the draft EIS provided a comparison of angler satisfaction among six wild trout waters in Northern California based on Hat Creek angler surveys collected by CDFG in 1996. The Pit River and the Fall River had the highest satisfaction ratings of the six rivers in terms of the number of trout landed, the size of trout landed, and the overall angling experience. In addition, angler responses provided by participants in the Flow

Assessment for Recreation Study (Whittaker and Shelby, 2003) indicated that most anglers rated all three of the bypassed reaches as “better than average,” “excellent,” or “among the best.”

Comment: The FS believes that the draft EIS incorrectly states that the FS originally proposed regime would not accommodate wade fishing in the Pit 4 reach, but correctly suggests it would be affected in the Pit 3 reach. The FS suggests that shaped minimum flows in the Pit 3 reach should be reduced to 250 cfs “if wade fishing is to be accommodated in the Pit 3 reach,” but also notes that flows would be in the acceptable range up to 300 cfs. We note that the PRCT agreement and the FS final 4(e) condition calls for a minimum flow of 300 cfs in the Pit 3 bypassed reach during most of the angling season.

Response: In the draft EIS, we stated that agency-recommended minimum flows ranging from 400 to 600 cfs in the Pit 3 reach and from 450 to 600 cfs in the Pit 5 reach could have an adverse effect on wading conditions. The optimal flow ranges identified by fly-fishers that participated in the flow assessment for recreation study (Whittaker and Shelby, 2003) were 155 to 217 cfs in the Pit 3 reach, 200 to 300 cfs in the Pit 4 reach, and 160 to 250 cfs in the Pit 5 reach. We view the flow regime proposed by the PRCT in PG&E’s letter dated October 29, 2003, as a reasonable balance between habitat and angler needs.

Comment: CDFG and Interior comment that the fishability study, included as part of the recreation report, is suspect because of its limited geographic and temporal scope and because it was performed by a small number of anglers familiar with the area, who may favor current levels of flow. CDFG also comments that conclusions in the fishability report should not be applied to all portions of the river equally, nor have any influence during the non-angling season. SWRCB also comments that the Whittaker and Shelby fishability study should be used in context of all recreation flow studies since the study may be biased as a result of the familiarity that the participating anglers had with the river and lacked adequate representation from spin anglers.

Response: We agree that the fishability study has some limitations, especially related to the limited sample size for spin/bait anglers. We also agree that there could be some bias towards the flows and locations that anglers are accustomed to fishing. However, the anglers that participated in the study have probably fished in a range of conditions in different rivers in the region, and we expect that this experience would enable them to evaluate conditions at alternative flows with a reasonable degree of accuracy.

Comment: The FS comments that there is typically a 2.5-3 degrees C diel fluctuation around the water temperature mean of 19-20 degrees in the Pit 4 reach, thus instantaneous water temperatures during June-August would commonly exceed the 20 degrees C State

Water Plan narrative value, which would in turn affect cold-water aquatic species such as rainbow trout. The FS further comments that the Pit 5 reach has similar water temperatures, except that the diel fluctuations are greater and the affected environment section should acknowledge that with the diel fluctuations, instantaneous water temperatures would commonly exceed the 20 degrees C State Water Plan and affect cold water aquatic species.

Response: We agree that PG&E's temperature monitoring and model results indicate that maximum diel temperatures may exceed 20 degrees C in portions of the Pit 4 and Pit 5 bypassed reaches, especially under adverse (warm and dry) conditions. Figure 10 in both the draft and final EIS illustrates this expectation based on model results. However, the existing temperature regime in all three bypassed reaches supports high quality trout fisheries as well as a number of sensitive fish and mollusc species, and maximum diel temperatures would be reduced with the increased minimum flows originally and currently proposed by PG&E. In the draft EIS, we also summarized literature on the temperature preferences of rainbow trout, including one study which found that rainbow trout continued to grow under fluctuating temperature regimes with maximum diel temperatures as high as 26.8 degrees C.

Comment: The FS, CDFG, Interior, CalTrout, and TU disagree with statements made in the draft EIS that increasing flows in the bypassed reaches to levels recommended by the agencies could have adverse effects on some aquatic species.

Response: In the draft EIS, we concluded that the higher minimum flows recommended by the agencies would make overall (reach-wide) water temperatures more favorable for trout in the Pit 4 and Pit 5 bypassed reaches, but could adversely affect the suitability of water temperatures for cold-water species below tributaries such as Canyon, Nelson, and Kosk creeks and in localized areas where there is substantial amounts of cool inflow from springs. We maintain that water temperatures in these areas would become less suitable for some cool-water species (including trout and some sensitive molluscs) if summer flows were increased to the levels that were originally recommended by the agencies in their recommended terms and conditions filed in response to the REA notice. As noted in an earlier comment summary, in its comments on page 123 of the draft EIS, the FS agreed with our conclusion that the originally recommended agency flow regime would have both beneficial and adverse effects on species and other conditions.

Comment: CDFG disagrees with the draft EIS conclusion that the warmer mean daily temperatures in the Pit 3 reach would have adverse impacts on the trout fishery. CDFG considers the warming trend in Pit 3 as not significant and the cooling trend in Pit 4 and 5 under higher flows to be beneficial. CalTrout and TU comment that they disagree that flow increases in Pit 3 would lead to less favorable conditions for trout since the slight

increases in temperature would fall within the preferred temperature for rainbow trout. Likewise, CalTrout, and TU comment that the reduction in temperatures in the Pit 4 and 5 reaches is necessary because current temperatures during the summer and early fall exceed preferred trout temperatures.

Response: After re-examining the literature on temperature preferences for rainbow trout, we agree that the agency-proposed flows would not increase water temperatures in the Pit 3 reach to levels that are outside of the preferred range for this species, and have modified the text in section 3.3.2.2, *Aquatic Resources*, of the final EIS accordingly. The flow regime currently proposed by the PRCT would be likely to enhance the overall temperature regime for rainbow trout in the Pit 4 and 5 bypassed reaches.

Comment: The FS comments that the misleading language in the statement “temperature of outflows from the Pit 3 powerhouse would probably increase if the minimum flow release were increased to levels greater than approximately 250 cfs, which would deplete the pool of cool water in the deeper part of Lake Britton,” should be removed and should simply state that temperatures would remain in the preferred range for trout.

Response: The results of temperature modeling presented in the license application indicate that summer water temperatures in the Pit 3 reach would rise as the volume of the deepwater release is increased, and the volume of cold water stored in the deeper portions of Lake Britton would be reduced. We do not consider this statement to be misleading. As previously noted, we have revised the text in section 3.3.2.2, *Aquatic Resources*, of the final EIS, to indicate that water temperatures in the Pit 3 reach would remain within the preferred range for rainbow trout.

Comment: Interior comments that the draft EIS proposes no other alternatives to improve water temperatures in the bypassed reaches and the final EIS should include a discussion of additional measures to improve release temperatures from project facilities.

Response: The existing temperature regime in all three bypassed reaches support high quality trout fisheries as well as a number of sensitive fish and mollusc species, and maximum diel temperatures in the Pit 4 and Pit 5 reaches would be reduced by the increased minimum flows proposed by PG&E. Also, previous analyses conducted by PG&E indicate that there is limited potential for altering summer water temperatures even with extensive modifications of project outlet facilities.³ On page 85 of our draft EIS, we specify that a component of our recommended temperature and DO monitoring plan should

³ Lake Britton Cold Water Feasibility Study; Pit 3, 4, and 5 Project. Prepared by Woodward-Clyde Consultants for Pacific Gas and Electric Company. November 25, 1985.

be a discussion of "...potential project operational procedures that could be implemented to maintain project waters at or below 20 degrees C (68 degrees F) and what circumstances would trigger implementation of those procedures." We continue to include this recommendation in the final EIS.

Comment: Interior comments that its recommended flows of 600 to 800 cfs would increase current velocities, improve the availability of DO, and reduce the accumulation of sediments and thereby partially restore those ecosystem functional processes to which resident aquatic species are adapted.

Response: Results of the instream flow and habitat mapping studies indicate that flows in the range recommended by Interior would cause water velocities in many areas to exceed the preferred range of velocities for some lifestages of fish and some invertebrates (e.g., the California floater) in parts of the river channel. Although higher flows would increase DO levels, the water quality data presented in table 12 of the draft EIS indicates that DO levels rarely fall below the state standard of 7.0 mg/l or 85 percent saturation, and would be expected to improve with the increased flows originally and currently proposed by PG&E for the Pit 4 and Pit 5 reaches. Finally, the accumulation of fine sediments has not been identified as a significant problem in the bypassed reaches, most likely due to the relatively high gradient of the river, the limited nature of inputs of fine sediment within the project area, and because of settling of fine sediments within Lake Britton. However, our recommended freshet flow releases (which are now consistent with the PRCT agreement) would serve to flush any fine sediment that may accumulate in spawning gravel in the three bypassed reaches.

Comment: In reference to pages 107-109, and 123 of the draft EIS, the FS comments that the we should refer to Appendix B of its comment letter for the correct classifications of FS special status species and that the California floater is a FS sensitive species, not a federal species of concern as listed on page 133.

Response: We have revised the text in section 3.3.2, *Aquatic Resources*, of the final EIS accordingly.

Comment: The FS comments that its revised preliminary 4(e) condition, "flow regime for affected NFSL" takes the middle ground between the our recommendation for freshet flows after 2 years of drought versus the FS's October 2002 preliminary 4(e) condition requiring annual freshet flows. The FS comments that all sections of the draft EIS would need to be modified to reflect this change.

Response: We have described and analyzed the final FS 4(e) condition pertaining to freshet flows (which is similar to the revised 4(e) condition) in sections 3.3.2, *Aquatic*

Resources, and 3.3.3, *Terrestrial Resources*, of the final EIS.

Comment: Interior comments that the draft EIS does not propose adopting Interior's recommendation to release at least two pulsed flow events each year during January to March with a maximum duration of 21 days per event, minimum peak duration of 2 days, minimum peak magnitude of 1,500 cfs to mimic spring freshets. Interior is reviewing the alternative proposed in the draft EIS to determine whether it would be consistent with Interior resource goals and objectives. PG&E comments that the freshet condition in the draft EIS is acceptable.

Response: We have reviewed the proposed freshet flow release plan that is specified in the PRCT agreement, which PG&E filed by letter dated October 29, 2003, and conclude that it represents a well-defined course of action that would ensure that periodic March high flows occur, and have modified the text of sections 3.3.2.2, *Aquatic Resources*, 3.3.3.2, *Terrestrial Resources*, and 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, accordingly. Since FWS and PG&E both signed the PRCT agreement, we consider this issue to now be resolved.

Comment: CalTrout, TU, and Fly Fishers comment that they disagree with the draft EIS regarding seasonal high flows in the bypass reaches. CalTrout, TU, and Fly Fishers recommend that the project be managed so that high pulse flows during the winter months occur at a higher rate than once per year in 8 of 10 years and that these flows last longer than four days in duration and would make specific recommendations after having adequate time to review and discuss recent flow studies.

Response: The freshet flow regime that we recommended in the draft EIS would have slightly increased the frequency of existing freshet flow releases to the bypassed reaches. The duration would have been increased to a total of 21 days, including ramp up and ramp down. The freshet flow plan in the PRCT settlement would maintain similar characteristics to what we recommended in the draft EIS, except it would be scheduled only if a flushing flow meeting specific criteria had not occurred for other reasons after 17 months (our originally recommended flushing flow release would have occurred if flushing flows had not been released after 2 years for other reasons). We agree with the PRCT proposed flushing flow regime and have modified the text of the final EIS accordingly, as indicated in the previous response. Since CalTrout and TU are signatory parties to the settlement agreement, we consider this issue to be resolved.

Comment: The FS comments that regarding ramping rates, the FS has modified its preliminary ramping rate condition from 1 inch per hour to 2 tenths of one foot per hour and are willing to discuss alternate proposals for ramping rates that would provide adequate protection of forest resources. CDFG comments that based on recent fish stranding results,

they find the Commission staff proposal to develop a ramping rate plan generally acceptable. CDFG recommends that it require concurrence from the appropriate resource agencies not just consultation. CalTrout, TU, and Fly Fishers comment that they concur with the draft EIS recommendation to develop a ramping rate plan and comment that additional measures should be developed to reduce safety risks to anglers during upramping. CalTrout, TU, and Fly Fishers recommend a rate of change that mimics pre-project rates during all months, specifically less than 10 percent per day for flows from May to October.

Response: As we discussed during the August 28, 2003, Section 10(j)/FS clarification meeting, the Commission must retain authority for final approval of any ramping rate plan that may be developed. The Commission typically only requires consultation with, not approval from, the agencies. Attendees of this meeting, which included the FS, FWS, and CDFG, agreed that the ramping rate issue is resolved (see page 2 of the meeting summary issued by the Commission on September 22, 2003). The PRCT flow regime agreement, filed by letter from PG&E dated October 29, 2003, and the FS final 4(e) conditions, filed by letter from the FS dated November 14, 2003, present a specific ramping rate plan, which would avoid the need to develop a ramping rate plan post licensing if the plan is included in any new license that may be issued for this project. We analyze this plan in sections 3.3.2.2, *Aquatic Resources*, and 3.3.3.2, *Terrestrial Resources*, of the final EIS.

Comment: The FS comments that the licensee characterizes spills as infrequent, yet the PG&E June 21, 2002 AIR#1, Response #2 includes a list of spills. The FS comments that we should evaluate each of these operational spills and that appropriate plans incorporate language to protect biological species affected by spills that can be controlled by the licensee. SWRCB comments that the draft EIS fails to recommend mitigation for planned or unplanned out-of-season spill events, which would result in significant impacts to aquatic life. SWRCB comments that the draft EIS must include a discussion of the means to mitigate adverse environmental impacts, including out-of-season spill events. PG&E comments that they agree that out-of-season spills have increased in recent years for a variety of reasons. PG&E comments that the feasibility study, included in the draft EIS recommended spill management plan, should include one alternative that examines the operational protocols designed to prevent out-of-season spills except for events beyond PG&E's control. PG&E also comments that if structural changes are necessary, full consideration of environmental impacts would need to be considered along with mitigation measures.

Response: In the draft EIS, we summarized the potential adverse effects of out-of-season spills. We have revised the text in section 3.3.2, *Aquatic Resources*, of the final EIS accordingly, to include the results of the 2002 controlled flow tests, which also indicate the potential for adverse effects to mussel reproduction and attached algae. This potential

for adverse effects was the basis for our recommendation in the draft EIS that PG&E consult with the FS, FWS, CDPR, SWRCB, and CDFG to develop a spill management plan. The PRCT flow regime agreement, filed by letter from PG&E dated October 29, 2003, and the FS final 4(c) conditions, filed by letter from the FS dated November 14, 2003, present a specific plan to control out-of-season spill flows. We analyze this plan in section 3.3.2.2, *Aquatic Resources*, of the final EIS.

Comment: The FS and Interior comment that the statement “There is no conclusive evidence that spawning habitat is currently limiting trout populations in any of the three reaches “ is not supported by the license application and other technical information that demonstrate that spawning gravels are in short supply.

Response: Our statement in the draft EIS was based on the quality of the fishery in each of the bypassed reaches, the lack of a relationship between the availability of spawning gravel and trout abundance (trout are most abundant in the Pit 3 reach despite a very limited supply of gravel) and evidence of successful recruitment of juvenile trout in all three bypassed reaches. We do, however, realize that gravel is relatively scarce, and that increasing the supply of gravel could increase the recruitment of juvenile trout. We have revised the text in section 3.3.2, *Aquatic Resources*, of the final EIS accordingly.

Comment: The FS comments that the draft EIS was published before the gravel mobility study by R2 Resource Consultants (2003) and the draft EIS overestimates sediment transport capacity. Therefore, our estimates in the draft EIS of mobile particle size and potential bedload sediment transport capacity cannot be relied upon directly for evaluating the probable efficacy and design of the various gravel augmentation measures that have been proposed for partially mitigating the Pit 3, 4, 5 Project’s significant impact on bedload sediment supply to the three bypass reaches. The FS and CDFG disagree with us that annual placement of approximately 2 to 5 tons of gravel would provide enough substrate to substantially enhance trout reproduction or macroinvertebrate production. Similar to the shared concern that too much gravel may be detrimental, the FS is concerned that too little gravel would produce no measurable increase of in-channel gravel storage beyond the immediate placement location. The FS proposes adoption of a spawning gravel augmentation and management program similar to our recommended program, but including annual placement of a larger amount of gravel (approximately 1,200 tons annually). The FS conducted an analysis, including costs, of its plan in comparison to our recommended plan, which is further detailed in its comment letter. SWRCB comments that it is not clear from the draft EIS analysis how we determined that the placement of 2 to 5 tons of gravel would be adequate. SWRCB comments that additional analysis should be provided to justify the quantity. PG&E comments that they accept the modest amount of gravel augmentation proposed in the draft EIS, even though production of trout fry or other larval fishes has not been shown to be limiting adult populations of rainbow trout or other

native fishes. As an alternative to gravel augmentation in the Pit 3 reach, PG&E suggests gravel augmentation in Rock Creek, which provides known spawning and rearing habitat for trout and may be more cost effective, easier to monitor, and ultimately more successful.

Response: The results of the 2003 gravel mobility study are subject to different interpretations by PG&E and the FS. By letter dated August 18, 2003, the FS suggested that it would be more productive to focus on the details of gravel augmentation rather than debate the merits of the study. We agree. The limited amount of gravel augmentation that we recommended in the draft EIS was based on two considerations: 1) that existing levels of recruitment are supporting quality trout fisheries in all three bypassed reaches, and 2) the limited scope of gravel augmentation programs implemented in other similar sized rivers in California, as summarized by the FS in the justification that it provided with its preliminary 4(e) conditions. We also had concerns that the gravel augmentation programs recommended by the FS, FWS, and CDFG did not provide any indication of the quantity of gravel, the number of placement sites, or the method of placement that was envisioned. The FS addressed these concerns in its revised and final 4(e) conditions and during the 10(j) meeting that was held on August 28, 2003 (see pages 3, 4, and 5 of the meeting summary issued by the Commission on September 22, 2003). We now consider this issue to be resolved and have revised the text in section 3.3.2.2, *Aquatic Resources*, of the final EIS accordingly.

Comment: CDFG generally finds the alternative spawning gravel recommendation acceptable with slight modification. CDFG comments that regular mapping of gravel would provide valuable information for adjusting and revising the gravel augmentation program. CDFG agrees that mitigation should take precedence over monitoring, but for an adaptive management approach to succeed, there must be valid measures of environmental response. CalTrout and TU recommend that the appropriate amount of gravel augmentation be developed in consultation with the agencies, and the inclusion of sediment maintenance flows designed to cleanse gravel while limiting gravel loss.

Response: The gravel management plan included in final FS 4(e) condition No. 21, which we recommend adopting, would include four years of baseline monitoring prior to implementation and post-implementation monitoring of substrate conditions as well as invertebrate populations, trout reproduction, and trout spawning. The provision of freshet flows as described in final FS 4(e) condition 17.IV, should assist with re-distribution and cleansing of gravels as recommended by CalTrout and TU. We have revised section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS to recommend adopting both of these final FS 4(e) conditions. During the 10(j)/FS clarification meeting held on August 28, 2003, we pointed out that we did not consider it practical for PG&E to conduct extensive gravel mapping throughout the bypassed reaches but suggested that monitoring gravel at representative locations could achieve the objective

of the gravel mapping suggested by CDFG (see page 4 of the meeting summary issued by the Commission on September 22, 2003).

Comment: Interior comments that the draft EIS does not propose adopting the Interior recommendation to implement a sediment management and monitoring plan for Project waters to improve passage of gravel and cobbles past project dams. Interior is reviewing the alternative proposed in the draft EIS to determine whether it would be consistent with FWS resource goals and objectives. Interior states that studies in the license application and elsewhere in the record strongly support requiring such a plan and Interior plans to fully address the details in its response to the Commission's March 26, 2003, letter initiating Section 10(j) dispute resolution.

Response: During the 10(j)/FS clarification meeting that was held on August 28, 2003, FWS indicated general acceptance of the plan proposed by the FS in revised 4(c) condition 17 (which is similar to final 4(c) condition 21), with the exception that they would like to see the program expanded to include the Pit 5 bypassed reach. A general consensus was achieved during this meeting that this approach would be acceptable to all parties, and that the final details could be worked out post-licensing (see pages 3, 4, and 5 of the Commission's meeting summary issued on September 22, 2003).

Comment: Interior disagrees with the draft EIS conclusion that passing woody debris over the dams would not produce an appreciable increase in large woody debris within the low-flow channel because large wood is transported over the dams only at high spill flows. Interior comments that properly timed placement of wood (collected at the dams) in areas downstream of the dams could be highly beneficial to improving channel complexity, retaining coarse sediments, and providing instream aquatic habitat. Interior understands that whitewater boaters confront obstacles while navigating a river, but Interior does not agree that management of wood passage, storage, and movement is in conflict with boaters.

Response: Although we agree that placement of woody debris in selected areas during low flow periods could provide some increase in the amount of woody debris stored in the low-flow channel, we conclude that this would provide a very limited benefit, since large substrate already provides habitat complexity and most of the debris would be transported from the low-flow channel during the next high flow event.

Comment: CDFG comments that our recommended woody debris transport analysis and placement plan alternative is acceptable, and the FS revised its preliminary 4(e) condition to be consistent with our recommended plan, which would require passage of woody debris at the Pit 3 dam only. PG&E comments that they provided data and results of a woody debris study in volume 2, section E3.1.2.4, pages E3.1-153 to E3.1-161 of the license application and thus requests clarification of what we mean by a woody debris transport

analysis. PG&E also comments that they can allow debris to pass over the spillway at Pit 3, but the practice is not feasible at Pit 4.

Response: At the August 28, 2003 10(j)/FS clarification meeting, we stated that we agreed that the analysis of woody debris transport and storage that PG&E provided in its application was sufficient and our recommendation was only intended to have the previous analysis included in the woody debris placement plan for background perspective. None of the parties present at the meeting, which included the FS, CDFG, and FWS, expressed disagreement with this approach, and we consider this issue to be resolved (see page 2 of the Commission's meeting summary, issued on September 22, 2003).

Comment: CDFG does not agree with our conclusion in the draft EIS that the Hat Creek fish barrier should be the responsibility of CDFG. CDFG does not believe that the draft EIS accurately portrays the relationship between the project and the aquatic resources within Hat Creek. CDFG is not responsible for creating the current problem, and thus CDFG should not be held responsible for future mitigation measures. CDFG assumes responsibility for developing the management strategy for the fishery as well as monitoring its health and composition. However, they consider the Hat Creek fish barrier to be strictly mitigation for project effects of Lake Britton, and that it should be the licensee's responsibility. CalTrout and TU comment that the draft EIS takes inconsistent positions as to the Hat Creek fish barrier. On one hand, the draft EIS recognizes the nexus between Lake Britton and the fish barrier area by including it in the geographic scope, however, on the other hand, the draft EIS rejects modifying the Proposed Action to include PG&E Hat Creek fish barrier inspection and maintenance responsibilities.

Response: Our conclusion in the draft EIS that CDFG should continue to be responsible for maintaining the Hat Creek fish barrier was based upon our review of the existing contract that CDFG and PG&E had signed on August 15, 1991, and our conclusion that management of the Hat Creek fishery should be under the direct control of CDFG. We discussed this issue extensively during the August 28, 2003, Section 10(j)/FS clarification meeting. Based on these discussions, PG&E announced that they agreed to meet with CDFG with the goal of developing a mutually agreeable management agreement for the Hat Creek fish barrier (see pages 7, 8, and 9 of the Commission's meeting summary issued on September 22, 2003). PG&E filed its proposed management measure for the Hat Creek barrier dam by letter dated December 29, 2003, which includes provisions for cooperative maintenance of the dam with CDFG. We analyze the provisions of this measure in section 3.3.2.2, *Aquatic Resources*, of the final EIS and make our recommendation in section 5.2, *Comprehensive Development and Recommended Alternative*.

Comment: NMFS (NOAA Fisheries) comments that they are concerned with the relatively cursory analysis that anadromous fish passage receives in the draft EIS, and while

anadromous fish passage does not occur at present, it did historically. NOAA Fisheries comments that unfortunately, the draft EIS concludes that the Shasta Project prevents passage and then dismisses further fish passage analysis. NOAA Fisheries further comments that the use of downstream projects to nullify the scientific and legal need or an adequate indirect impact analysis is without merit and the draft EIS has not made a clear argument to negate the need for a thorough fish passage analysis. NOAA Fisheries comments that failure to examine the feasibility of fish passage could result in a deficient license.

Response: In the draft EIS, we described the effects of construction of the Pit 3, 4, and 5 Project and of downstream dams on anadromous fish runs, and we evaluated the feasibility of providing fish passage based on available information. In its comment letter, NOAA Fisheries did not provide any specific information that would alter the conclusions that we made in the draft EIS, and we maintain that it is not reasonable to require PG&E to evaluate passage at dams that are located downstream of its projects. In the event that migration conditions in the Sacramento River are improved at some point in the future, Interior could use its reserved Section 18 authority to prescribe such fishways as may be deemed necessary at the Pit 3, 4, and 5 Project (see section IV.C.1 of the draft EIS, *Section 18 Fishway Prescriptions*). Although the Secretary of Commerce did not reserve its authority to prescribe fishways, it has the option of recommending them through the Commission's standard fish and wildlife re-opener clause. If fishways are to be considered in the future at the Pit 3, 4, 5 Project, the Commission would expect the requesting entity to provide an appropriate administrative record in support of the need for fishways.

Comment: The Tribe comments that they disagree with our position that construction of fish passages that would enable the reintroduction of anadromous fish would be unrealistic and a major engineering challenge. The Tribe has informally consulted with NOAA Fisheries and is actively pursuing assessing the feasibility of fish passage along Cow Creek. The Tribe comments that they defer to NOAA Fisheries to provide more detailed comments on fish passage.

Response: Please see our response to the previous comment from NOAA Fisheries.

Comment: PG&E comments that the draft EIS recommendation to hold Lake Britton reservoir fluctuations between elevation 2,734.5 and 2,737.5 feet NGVD from March 1 to May 31 may not provide any additional benefit to the Lake Britton bass populations, since the spillway flashboard system was replaced with an inflatable bladder gates in 1988, making it no longer necessary to lower the lake level to install the flashboard system prior to raising it to its summer season level.

Response: Although we recognize that installation of the inflatable bladder gates has reduced effects on spawning and recruitment of Centrarchid fishes, we conclude that our recommended operating restriction in the draft EIS, which would formalize the current water level management regime at Lake Britton, would ensure protection against the dewatering of fish nests. The PRCT flow regime agreement, of which CDFG and PG&E are signatory parties (and which is consistent with the FS final 4(e) conditions), calls for an alternative operating band during the spring Centrarchid spawning season, which we assess in section 3.3.2.2, *Aquatic Resources*, of the final EIS.

Comment: The FS notes that we disagree with the FS preliminary 4(e) condition 30 recommendation that “(t)he licensee shall also conduct quantitative fish entrainment monitoring following procedures developed by the licensee and agreed to by the FS and other consulting agencies.” The FS points out that we cite expense and uncertainty of the results as the reason. Consequently, the FS has modified this condition and incorporated it into the fish and benthic macroinvertebrates monitoring condition, which should meet the FS resource objectives and minimize costs to PG&E by not requiring this work unless downward fish population trends indicate the need.

Response: We agree that some form of entrainment monitoring may be appropriate if downward trends in sensitive fish populations are evident and have modified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, accordingly.

Comment: CalTrout and TU comment that the PRCT should be included among the list of consulted entities for the macroinvertebrate plan and that methods for quantifying biomass/density be identified and implemented as part of the plan.

Response: We recommend that PG&E consult with CDFG, FWS, CDPR, SWRCB, and the Tribe during the development of the biological monitoring and adaptive management plan (which would include the fish and invertebrate monitoring plans), all of which participated in the PRCT discussions. We conclude that these entities have sufficient expertise to represent appropriate interests. The PRCT has been an effective collaborative group, but since it was not restrictive in who participated in the deliberations, there is uncertainty regarding who we would expect PG&E to consult with if we asked them to consult with the PRCT. We prefer to have the objectives of the monitoring, which could include measuring invertebrate biomass and density, developed during consultation and specified in the monitoring plan.

Comment: Interior comments that the draft EIS does not propose adopting the Interior recommendation to monitor fish and invertebrates, with angler surveys in the project reservoirs and bypassed reaches for the first 8 years and then years 12, 16, 20, and 24.

Instead, the draft EIS proposes annual monitoring for the first 4 years and then in years 8, 12, 16, 20, and 24. Interior agrees with the proposed change because it is consistent with their 10(j) recommendation for a fish population monitoring plan. PG&E supports the development and implementation of a fish and invertebrate monitoring plan that would include: angler surveys; reservoir fish surveys; river reach fish surveys; macroinvertebrate surveys; and mollusc surveys. CalTrout and TU comment that the PRCT should be added to the consultation loop for the fish population monitoring plan and that the plan include measurement of growth rates, individual fish health, taxa richness, and relative abundance, as well as creel surveys every 2 years.

Response: We appreciate Interior's concurrence with our draft EIS recommendation. As indicated in our previous response, we do not concur with CalTrout and TU that the PRCT, per se, should be included among the consulted entities during the development of the fish and macroinvertebrate monitoring plans. We agree that the objectives of the monitoring, which could include measurement of individual fish health (i.e., noting the occurrence of any visible injuries or disease), species composition, and relative abundance, should be included in the monitoring plan. We believe that measuring fish length and weight should provide adequate information on fish health (i.e., condition factor) without requiring a tagging study or collection of fish scales to determine fish growth rates, both of which could have adverse effects on the fishery. We do not agree that creel censuses need to be conducted every two years, and believe that the schedule that we recommended in the draft EIS would be adequate to identify trends in angler satisfaction and catch rates.

Comment: CDFG comments that our recommendation to develop and implement a fish and invertebrate monitoring plan should include not only standard species, but also special status species with occur within the Project, for example, rough sculpin and bigeyed marbled sculpin. CDFG comments that the monitoring plan should also quantify ongoing project impacts (e.g., entrainment) to determine whether existing PM&E measures are adequate.

Response: We concur that it would be appropriate for the monitoring plan to include specific methods for monitoring special status species of fish, and note that the FS final 4(e) condition requires population trend monitoring for FS sensitive species. As stated in the draft EIS, we see very little benefit in monitoring fish entrainment, but we agree that some form of entrainment evaluation may be justified if downward population trends are observed for any FS or state sensitive fish species.

Comment: CDPR requests that it be added to the list of agencies to be consulted during the development of the biological monitoring and adaptive management plan recommended in the draft EIS. CalTrout, TU, and Fly Fishers comment that all PRCT members be included in the list of consulting agencies. CalTrout and TU also comment that they are

open to Interior's suggestion of an Environmental Resource Committee and ask that if adaptive management is implemented, a thorough and rigorous application be utilized.

Response: We agree to add CDPR to the list of consulted agencies during the development of the biological monitoring and adaptive management plan because the monitoring results have the potential to influence some management aspects of the Burney Falls State Park on Lake Britton (e.g., bald eagle monitoring). We modified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, accordingly. We addressed the potential formation of an Environmental Resource Committee on page 147 of the draft EIS. We would not object if the formation of an Environmental Resource Committee was an outcome of the development of the biological monitoring and adaptive management plan. As noted in the draft EIS, we only have authority to require the licensee to participate on such a committee.

Comment: PG&E comments that they are uncertain of the purpose of the biological monitoring and adaptive management plan recommended in the draft EIS. PG&E states that the blanket statement for adaptive management is too vague and an adaptive management program needs to be applied to specific conditions where it can be reasonably determined that a proposed action would cause the specified resource to move toward a specific resource goal. The goals need to be specific enough to be able to assess if they are being achieved. The adaptive management program also should allow return to pre-program levels if it is demonstrated that the expected goal of a specific measure has not been achieved.

Response: We do not disagree with PG&E's comment, and feel that it supports the need to develop the biological monitoring and adaptive management plan that we recommend. As we stated on pages 148, 369, and 370 of the draft EIS, we consider this plan to be an overarching plan that would include specific aquatic and wildlife monitoring plans that we recommend elsewhere in the EIS. As we stated on page 370 of the draft EIS, monitoring should be conducted with the potential for actions to be taken as a result of the findings. We expect the specific goals and objectives of each monitoring plan that would be included in the biological monitoring and adaptive management plan to be identified during our specified plan development consultations as well as specification of the monitoring results that would trigger implementation of actions. Potential actions could include such straightforward measures as an increase, modification, decrease, or elimination of the monitoring. Actions could also entail such measures as re-examination of the specifics of a license condition, such as elements of the flow regime that may be specified in a license order. When actions taken pertain to items specified in the license order, a license amendment may be necessary. We have added text to section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, where our recommended biological and adaptive management plan is described, to clarify our intentions.

Terrestrial Resources

Comment: The FS states that it is unclear why the cover types in table 2 of the GANDA report (GANDA, 2001, which is included in PG&E's license application) and table 28 of the draft EIS do not match. The FS interprets the reason to be that the GANDA report includes only the riparian corridor, while the draft EIS also includes a two-mile corridor centered on the Pit River from the Highway 299 bridge to the Pit 5 powerhouse. The FS asks that the Commission staff clarify the FS assumption.

Response: Acreages shown in table 28 of the draft EIS were taken from table 1 of PG&E's filing dated December 3, 2002. PG&E filed table 1 as a replacement for information filed on October 1, 2002, in response to the Commission's AIR No. 5 on vegetation mapping. As indicated in the caption, table 28 presents the acreage of each vegetation cover type within the FERC project boundary. Some information presented in table 28 of the draft EIS was presented in PG&E's license application (which included, as an Appendix, GANDA, 2001). However, we incorrectly listed a supplemental source as PG&E, 2002, which according to our literature cited, was the results of the fish survey that we requested as AIR No. 3. We have corrected the citations for the December 3, 2002, filings in section 3.3.3.1, *Terrestrial Resources*, of the final EIS.

Comment: Interior agrees with our recommendation that PG&E develop an integrated weed management plan, but comments that the use of herbicides could have detrimental impacts on non-target plants, vegetation, animals, and water and recommends that the plan establish a 10-year pilot period where only non-herbicide weed treatments are used and evaluated, after which herbicide use could be revisited. The Tribe comments that they should be consulted regarding the noxious weed management plan. The Tribe recommends that the plan include a list of the types of weed control measures that must be considered first, before employing herbicides. EPA and the Tribe comment that the final EIS should provide further information on measures that could be incorporated into the integrated weed management plan to ensure that the use of herbicides would be avoided whenever possible.

Response: Our review of the literature convinces us that in some cases, herbicides may be the best treatment choice for noxious weeds, i.e., the treatment, either alone or in combination with other methods, with the highest likelihood of controlling the target weed and the lowest likelihood of adverse effects on other resources (Tu, et al., 2001). However, we have added text to section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS recommending PG&E emphasize a non-herbicide approach and use herbicides, if at all, only at specific sites. For these sites, the plan should indicate why other techniques, such as manual or mechanical control measures, would not be effective and identify measures that would be taken to protect non-target

plants and animals.

Although our EIS establishes a framework for development of the weed management plan, we have not added detailed information about measures that should be incorporated into the plan, since the plan would need to reflect goals and objectives that have not yet been determined. Detailed weed management measures would depend on site-specific conditions that are best addressed by local expertise during our recommended consultation for plan development. On page 179 of the draft EIS, we included the Tribe as a consulted entity in the development of this plan and we continue to include the Tribe in this consultation in the final EIS.

Comment: PG&E comments that they accept responsibility to participate and cooperate in the development of an integrated noxious weed management program, but they have no authority to compel any other entity to participate. PG&E suggests revising the condition to require PG&E to participate and cooperate in the development and implementation of an integrated noxious weed management program when the responsible authority undertakes this effort and otherwise PG&E would develop and implement weed control measures as an element of its vegetation management program.

Response: While neither PG&E nor the Commission have the authority to require other entities to participate in developing or implementing a weed plan for project lands, we think cooperation would maximize the chance for successful weed control in the project vicinity on a number of land ownerships, both public and private. We recommend PG&E encourage the participation of other entities. Should other entities decline, their declination should not preclude PG&E from timely filing an integrated weed management plan with the Commission. Likewise, our recommendation would not preclude PG&E from participating in cooperative weed control plans developed by other entities.

Comment: In response to the draft EIS recommended vegetation management plan, PG&E comments that it conducted special status plant surveys as part of the relicensing proceeding and would provide a map to maintenance personnel and develop protocols for working in these sensitive areas and would conduct additional surveys in areas where ground disturbing activities are planned. PG&E also comments that they have little input to fire management within project boundaries but agree to consult with appropriate agencies and the Tribe to incorporate wildlife habitat management measures and would consider participation in cooperative efforts to manage wildlife habitats adjacent to the project.

Response: We appreciate PG&E's cooperation in the implementation of this recommended measure.

Comment: PG&E comments that it entered into a Memorandum of Understanding to

conduct a supplemental traditional cultural properties study, a component of which is to identify ethnobotanical resources. The Tribe comments that they concur with our recommendation that PG&E study the Tribe's cultural use of botanical resources, establish gathering sites, and incorporate important species into plans for revegetation.

Response: We appreciate PG&E's cooperation in addressing ethnobotanical resource issues that are important to the Tribe.

Comment: Sid and Vaudine Cullins comment that they would like grazing to be reintroduced in the project area in response to the discussion on pages 276-277 regarding a higher incidence of fires since grazing was halted in 1980 and the recommendation on page 296 for vegetation management.

Response: The information we reviewed suggests that the higher frequency of small fires in recent years (i.e., since 1981) may be related to increases in residential development and recreation activity, rather than a decrease in grazing. Although livestock grazing can serve to reduce potential fire fuels, we noted on page 180 of the draft EIS that localized overgrazing by livestock is identified by CDFG as having an important influence on the downward trend in the deer population. We recommend in the EIS that PG&E consult with a number of entities in the development of its vegetation management plan (which would include any potential fuel load reduction measures), including the FS, FWS, CDFG, CDPR, and the Tribe. Grazing adjacent to project waters has been shown to adversely influence shoreline habitat and water quality at the nearby Hat Creek Project, and we consider it unlikely that the consulted entities would agree that the reintroduction of grazing to project lands would be a viable option for fire fuel load reduction at the Pit 3, 4, 5 Project. The FS, in its final 10(a) recommendations filed by letter dated November 14, 2003, concurs with our conclusion that grazing should not be allowed on project-associated lands for the duration of any new license that may be issued for this project.

Comment: The FS comments that Forest Plan Management Indicator Species (MIS) need to be addressed. They state that the Terrestrial Wildlife Report provided in Appendix B-4 of their comments could be included as an appendix to the final EIS and a statement such as "Lassen Forest Plan MIS and Shasta-Trinity Forest Plan Wildlife Assemblages are addressed in Appendix X" could be added to the special-status wildlife section.

Response: We addressed MIS that could be influenced by project operations in the draft EIS (we did not address those that we concluded would not be influenced). However, we added the one aquatic MIS for the Lassen and Shasta-Trinity National Forests (rainbow trout) to table 26 (Special-status aquatic species that could occur or are documented to occur in the project area) of the final EIS. We added text to identify MIS wildlife species for the Lassen and Shasta-Trinity National Forests immediately following the table of

special status wildlife species in section 3.3.3.1, *Terrestrial Resources*, of the final EIS, referencing appendix B-4 of the FS May 19, 2003, letter to the Commission. We concur with the conclusions of the FS that with implementation of our recommended measures, relicensing the project should not adversely influence wildlife MIS.

Comment: The FS comments that table 31 needs the following corrections: add great gray owls as FSS and FSM species– not likely to occur, little suitable meadow foraging habitat and outside range of red tree voles (primary prey); add American marten as FSS-- unlikely to occur, may be too low in elevation, none found in camera/bait station or track-plate surveys; four species of bats that are listed as protection buffer species including fringed myotis, silver-haired bat, long-eared myotis, and long-legged myotis; willow flycatcher is FSS and yellow-breasted chat is not FSS. The FS comments that there is no discussion of the sandhill crane that is listed in table 31 and there should be an analysis of why it was dropped from further analysis.

Response: We have made the recommended changes to the indicated table and the associated text in section 3.3.3.1, *Terrestrial Resources*, for great gray owl, American marten, four species of bats, willow flycatcher, and yellow-breasted chat, and added a note to table 34 of the final EIS (table 31 in the draft EIS) that no habitat is present in the project area for the greater sandhill crane.

Comment: Senator Aanestad comments that “the wetland environment provided by upstream irrigation may decrease wetlands now available for species such as the federally listed sandhill crane.” We interpret this comment to mean that if the ability of upstream water users to divert water is diminished by the flow regime that may be included in a new license for the Pit 3, 4, 5 Project, wetlands that now exist in the upper portions of the Pit River watershed as a result of runoff from irrigation could lose their hydrologic source. This could result in reduction of habitat for species that depend on these wetlands.

Response: Although listed as threatened in the state of California, the greater sandhill crane is not federally listed under the Endangered Species Act. As previously indicated in our response to the numerous comments received pertaining to the upstream water use issue in the water resources section of our comment responses, key upstream water users and agencies signed the PRC T agreement pertaining to the proposed project flow regime. PG&E has informed the Commission that it has reached agreements with upstream water users that would enable them to continue with their current diversion pattern, thus ensuring that wetlands that are dependant on irrigation runoff would persist.

Comment: The FS comments that there should be a discussion of habitat and species description for peregrine falcons including population trends, nesting habitat, and known nesting sites. The analysis section discusses the potential to disturb peregrines, but does

not describe the effects or potential for these effects.

Response: We have made the recommended changes to section 3.3.3, *Terrestrial Resources*, of the final EIS.

Comment: In response to the draft EIS recommendation to develop and implement a peregrine falcon monitoring plan, PG&E comments that they recommend conducting annual surveys of known nesting territories. PG&E comments that any project related activities in the vicinity of the nest territories would be noted along with any behavioral response observed and peregrine activities would be monitored within 1/4 mile of any known nest.

Response: We have modified our description of our recommendation in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS to reflect PG&E's proposed monitoring plan.

Comment: The FS comments that no citations were listed for portions of the bat discussion including distribution and habitat use and there is a lack of references cited throughout the wildlife sections.

Response: We have provided additional references for some text in the wildlife sections of section 3.3.3, *Terrestrial Resources*, of the final EIS, but as we indicated on page 31 of the draft EIS, unless otherwise stated, the source of our information is the license application.

Comment: The FS asks that the following statement from Pierson et al. (2001), be added to the discussion of Townsend's big-eared bats: "while this species will use human structures that resemble caves, none of the powerhouses, dams or associated structures offered suitable day roosting habitat for this species".

Response: We have added the suggested text to section 3.3.3.1, *Terrestrial Resources*, of the final EIS.

Comment: The FS asks that the following information from Pierson et al. (2001), be added to the discussion of pallid bats: acoustic surveys did record this species in mixed oak conifer stands and at the base of cliffs.

Response: We have added the suggested clarification language to section 3.3.3.1, *Terrestrial Resources*, of the final EIS.

Comment: PG&E agrees that bat roosting is a problem at some facilities and comments

that it would consult with a bat expert regarding methods to prevent bats from entering the stairway chamber at the Pit 5 dam and the control room at the Pit 5 gaging station.

Response: PG&E's proposed consultation with a bat expert should facilitate compliance with our recommendation to take steps to minimize human/bat interactions.

Comment: The FS comments that a statement is needed in the effects analysis about the possible effects to bats such as, "Installation of a gate on Pit 4 tunnel opening will maintain suitability of that structure for Townsend's and other species. There would be very little modification of oak conifer forests and no modification of rock outcrops/cliffs that provide habitat for pallid bat."

Response: We have added the suggested text to the effects analysis in section 3.3.3.2, *Terrestrial Resources*, of the final EIS.

Comment: PG&E accepts the draft EIS condition to construct a bat-friendly gate at the Pit 4 adit that would prevent public access while allowing bats to enter and exit. However, PG&E comments that annual monitoring of bat presence does not seem necessary as long as the gate is constructed to specifications acceptable to a bat expert and it is demonstrated that it would allow bats to utilize the adit.

Response: We are recommending PG&E monitor the physical condition of the gate and maintain it in good repair, rather than monitoring bat use of the adit. We acknowledge that item 16 on page 363 of section VII.A, *Recommended Alternative*, of the draft EIS, did not correctly reflect our intent, and have modified the final EIS accordingly in section 5.2, *Comprehensive Development and Recommended Alternative*.

Comment: The FS comments that there should be a discussion of the effect, although short-term, of the decrease in riparian forest in the Pit 3 and 4 reaches (table 32) on the red bat, which is strongly associated with riparian forests.

Response: We have added the suggested discussion to section 3.3.3.2, *Terrestrial Resources*, of the final EIS.

Comment: In response to the draft EIS recommended plan to monitor populations of bank swallow colonies around Lake Britton, PG&E comments that it would consult with the FS, FWS, and CDFG to develop monitoring protocols, timing and frequency, and provisions for reporting.

Response: PG&E's proposed consultation would facilitate development of our recommended monitoring plan.

Comment: The FS comments that the terrestrial molluscs and protection buffer species analysis that the FS conducted (Appendix B to the FS May 19, 2003, comment letter) can be either fully incorporated into the final EIS or referenced and included as an appendix.

Response: We have added relevant information from Appendix B of the FS submittal to the main body of the final EIS, as appropriate. We also reference the source of the additional text, which is in the public domain and part of the record for this proceeding. We do not consider it necessary to include the six reports that comprise appendix B as an appendix to our NEPA document.

Comment: The FS comments that two terrestrial S&M molluscs, papillose tail-dropper slug (*Prophysaon dubium*) and Church's sideband snail (*Monadenia churchi*), no longer need to be considered. Paragraphs on page 176 should be changed to reflect that *Prophysaon dubium* was dropped under the FS EIS for Amendment to the Survey and Manage, Protection Buffer and other Mitigation Measures Standards and Guidelines, 2000.

Response: We have modified the text of section 3.3.3.2, *Terrestrial Resources*, of the final EIS, to reflect these changes in status.

Comment: The FS comments that in addition to the objectives that we stated on their behalf regarding the FS goals for aquatic resources in prescribing higher flows, the following should be listed: maintain or improved habitat for FS special status aquatic species including foothill yellow-legged frogs, hardhead, etc.; improve the hyporheic zone to the extent feasible; maintain or improve habitat for species of interest where directed by LRMPs; increase the diversity of aquatic habitats by increasing inundation of side channels, backwaters, etc.; maintain or restore the species composition and structural diversity of plant communities in riparian areas; increase diversity of flows that more closely mimic the seasonal variations found in the natural hydrograph, etc.; and other "Aquatic Conservation Strategy Objectives" included in the Record of Decision for Amendment to the FS and BLM Planning Document within the Range of the Northern Spotted Owl, April 1994.

Response: We have added the suggested text to section 3.3.3.2, *Terrestrial Resources*, of the final EIS.

Comment: The FS comments that the discussion of riparian habitat on pages 183-184 of the draft EIS outlines the negative botanical impacts of increased base flows without acknowledging the positive impacts of the increased base flows, such as decreased torrent sedge and willow scrub vegetation, that has reduced connectivity of small backwater habitats and had adverse effects on foothill yellow-legged frog habitat; and decreased noxious weeds.

Response: In the third paragraph of our analysis in the subsection that the FS references (Effects of Flow Releases on Riparian Habitat), we mention some of the positive benefits of higher flows on riparian habitat functions. We discuss possible benefits to foothill yellow-legged frog of higher flows in the subsection that follows, entitled "Effects of Flows on Special-Status Amphibians and Reptiles."

We recognize that higher flows would decrease the cover of noxious weeds that are intolerant of flooding, but our review of the GANDA report referenced by the FS in this comment (Garcia and Associates, December, 2000: Appendix E3.3-1 in application: Botanical Resource Studies: Vegetation Mapping, Special Status Plant Species Surveys and Noxious Weed Surveys) does not indicate that noxious weeds are a dominant component of the plant community at elevations that would be flooded.

The GANDA report mentions that vegetation at many sites dominated by California brickellbush is sparse and may cover less than 30 percent of the sites. The report describes disturbed-site annuals as comprising a large proportion of the plant community in the California brickellbush vegetation series. The report mentions that vegetation in this series may be composed of both natives (e.g., California brickellbush, mugwort, and up to 25 percent cover of sandbar willow) and non-natives (white sweetclover), but does not mention that noxious weeds occur at these sites.

The GANDA report describes Himalayan blackberry as a characteristic species of the sandbar willow series. Himalayan blackberry occurs as an intermittent band along the river from the Pit 3 dam to the Pit 5 powerhouse and at scattered sites around Lake Britton. Although Himalayan blackberry is tolerant of a wide range of moisture conditions, it is not tolerant of shade. Increasing open-canopy conditions along the river margin would be likely to increase the cover of Himalayan blackberry.

The GANDA report points out that noxious weed occurrences are concentrated along access roads, around powerhouses, and at recreation facilities, probably as a result of vehicular traffic. In our view, development of an integrated weed management plan would be of broader value in controlling noxious weed infestations than changes in the flow regime.

Comment: PG&E comments that the draft EIS recommendation to develop and implement a riparian vegetation monitoring plan for the three bypassed reaches to document changes over time and in response to instream flow requirements is acceptable.

Response: We appreciate PG&E's cooperation in the implementation of this recommendation.

Comment: CalTrout and TU comment that the draft EIS contains an apparent contradiction regarding the potential influence of implementing recommended flows that more closely mimic the natural hydrograph and asks for clarification of the alleged influence that implementing a flow regime that more closely mimics the natural hydrograph would have on riparian habitat.

Response: Increasing flows would have both positive and negative effects on existing riparian vegetation, habitat function, and wildlife species. For example, torrent sedge encroaching into the river channel may reduce the area of suitable breeding habitat for the foothill yellow-legged frog, but sedge provides hiding cover for foothill yellow-legged frog tadpoles and juveniles (Kupferberg, 2003). In the South Fork Eel River, torrent sedge tussocks were found to provide a substrate for more than 60 other plant species (Levine, 1999). Like torrent sedge, sandbar willow may also reduce the area of suitable breeding area for the foothill yellow-legged frog, but its other riparian habitat values (bank stabilization, slowing of flood flows, provision of nesting and hiding cover for wildlife, source of basketry materials for Native Americans) are well known (Kattelman and Embury, 1996; Moyle, et al., 1996). In our view, it is important to recognize the variety of results that are likely to occur, both positive and negative.

Comment: The FS and Interior believe that existing baseflow conditions have allowed heavy encroachment of historical cobble/boulder bars by riparian trees and sedges, and that new higher baseflows would inundate portions of these bars, creating new breeding habitat patches for foothill yellow-legged frogs. However, the FS comments that mechanical removal of vegetation may be required to provide sufficient open-canopy areas for breeding and tadpole rearing. The FS comments that similar habitat enhancement projects on the Trinity River have been successful in creating more breeding habitat.

Response: It is our understanding that habitat enhancement projects in the Trinity River were designed to remove berms that had developed over time along the mainstem as a result of severely reduced flows in an alluvial system with large sediment inputs. Breaching sections of the berms and recontouring the banks was intended to create shallow, low-velocity hydraulic conditions for juvenile chinook rearing (USBR, 2000), not to reduce vegetative cover. The finding that foothill yellow-legged frogs used these sites within 1 year of construction suggests they were very effective in providing conditions that were suitable for frogs as well as for fish, but does not show whether their suitability should be attributed to improved hydraulics, or a more open canopy, or both. In any case, reports filed by PG&E (Spring Rivers, 2003b) and the FS (Kupferberg, 2003) conclude that breeding habitat is not likely the factor that currently is limiting to foothill yellow-legged frog populations in the Pit River. Kupferberg (2003) points out that the preferred flow regime should be one that maximizes survival and recruitment, rather than breeding habitat area. In light of these reports and other findings (e.g., observations of 10 new breeding

sites in the Pit 4 reach during spring of 2003 [Spring Rivers 2003b]; Kupferberg's observations that in the Eel River breeding occurred in shady settings, as well as in open settings; and the importance of riparian habitat for species other than frogs), we are not convinced that removing vegetation would benefit frogs in particular or habitat quality in general.

Comment: Interior comments that the draft EIS expresses concern over potential effects to foothill yellow-legged frogs, but recommends only a feasibility assessment despite possible future federal listing. Interior comments that the future installation of flow continuance devices to address surging bypassed reach flow and possible measures to protect sensitive species such as foothill yellow-legged frog should be expanded.

Response: We agree that addressing concerns about sensitive species before they are federally listed is often the most effective and most economical means of protecting them. However, none of the information filed to date about foothill yellow-legged frogs indicates that installation of flow continuance devices at all three powerhouses would be a key factor in improving their habitat or increasing their populations. PG&E filed a plan to control out-of-season spill flow events in its October 29, 2003, submittal of the PRCT agreement on flow-related issues, which is consistent with the FS final 4(e) condition No. 18. In that plan, PG&E agrees that if facility modification is required to implement the provisions specified in this plan, it would complete such modifications as soon as reasonably practical and no later than 3 years after license issuance. We conclude that finalization of this plan is needed to specify what, if any, facility modifications may be needed to implement this plan and control discretionary, out-of-season spill events, and include our recommendation pertaining to controlling such events in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS.

Comment: The FS comments that they spent considerable effort on better understanding the foothill yellow-legged frog and recommends consideration of Dr. Kupferberg's analysis (Appendix A-2, FS comment letter) of reports filed by PG&E, including "Draft Pit River Habitat Mapping: Results of the August 2002 Demonstration Flow Study," (R2 Resource Consultants, March 17, 2003) and "Draft Foothill Yellow-Legged Frog (*Rana boylei*) Studies in 2002 for PG&E's Pit 3, 4, and 5 Hydroelectric Project," (Spring Rivers Ecological Services, March 14, 2003).

Response: We have added information from Dr. Kupferberg's analysis and from the R2 and Springs Rivers reports to section 3.3.3.2, *Terrestrial Resources*, of the final EIS. We have also added information from PG&E's filing dated September 25, 2003 (2003 Egg Mass and Tadpole Surveys for Foothill Yellow-legged Frogs (*Rana boylei*) for Pacific Gas and Electric Company's Pit 3, 4, and 5 Hydroelectric Project (FERC No. 233), prepared by Spring Rivers Ecological Services and dated 15 September 2003.

Comment: In response to the draft EIS recommendation to develop and implement a foothill yellow-legged frog monitoring plan and 5-year study of breeding site characteristics, PG&E commented that they have continued studies relating to foothill yellow-legged frog breeding activities in the Pit 4 reach. PG&E provided outlines of the 2003 studies, which included: monitoring for onset of breeding; Pit 4 reach survey; egg mass monitoring; and tadpole monitoring.

Response: We appreciate the information PG&E has provided about the 2003 foothill yellow-legged frog monitoring plan and have modified section 3.3.3, *Terrestrial Resources*, of the final EIS, to reflect the information filed with the Commission by letter dated September 25, 2003.

Comment: The FS comments that our assertion that the Trinity River example (1996 study of the Trinity River by Lind et al.) is not relevant because the manipulation of discharge at the Pit River did not increase the area of vegetation free patches is based on faulty reasoning. Habitat on the Trinity was created by removing woody vegetation mechanically, whereas in the Pit River flow study there was no removal of vegetation. The FS concludes the data from the Pit River are analogous to the Trinity River data such that usable habitat area would increase by 30 percent at 400 cfs and by 71 percent at 600 cfs at occupied breeding sites for vegetation categories 1 and 2. The FS also comments that we do not present any evidence that habitat patch size is directly related to foothill yellow-legged frog breeding success.

Response: Our conclusion that higher flows reduced the area of available breeding habitat for foothill yellow-legged frogs was based on information provided by PG&E and the FS in 2002, as presented in table 33 of the draft EIS. We have revised the text and the table, based on final reports provided in 2003 (Spring Rivers, 2003d; Kupferberg, 2003) that provide additional information about vegetation categories that should be considered as existing and potential breeding habitat.

We have also clarified the text of the final EIS regarding our interpretation of the data collected in the Trinity River (Lind et al., 1996). It is our understanding that foothill yellow-legged frogs used "feathering" project sites along the Trinity River mainstem that were created by recontouring steep banks - which required removing vegetation growing on the banks - to create shallow, low velocity conditions (USBR, 2000). Lind et al. (1996) does not show whether foothill yellow-legged frogs used these sites for breeding because the hydraulics were improved or because vegetation was removed, or both. Known breeding sites in the Pit 4 reach are considered to have a suitable width-to-depth ratio under current conditions (Kupferberg, 2002); for this reason, findings in the Trinity River following construction of the "feathering" projects may not be entirely analogous.

Comment: PG&E comments that western pond turtles are abundant in project reservoirs and it appears that the project has benefitted this species. Therefore, PG&E questions the intended purpose and scope of the monitoring plan for the western pond turtle, recommended in the draft EIS.

Response: Information filed to date shows that surveyors observed 24 turtles in Lake Britton, none in the Pit No. 4 reservoir, none in the Pit 5 reservoir, and none in the Tunnel Reservoir (Spring Rivers, 2001: River Corridor Habitat Mapping and Biota Surveys, with Emphasis on Special-Status Species, for Pacific Gas and Electric Company's Pit 3, 4 and 5 Hydroelectric Project, Appendix E3.1-2 of License Application). Our interpretation of this data does not suggest that turtles are abundant in project reservoirs, and without pre-project data, we cannot conclude that the project has benefitted the species. Since juvenile pond turtles may share some attributes (e.g., habitat preference for open, rocky basking sites in pools and backwaters; vulnerability to bullfrog predation) with foothill yellow-legged frogs and could be similarly affected by changes in the flow regime and subsequent changes in riparian habitat characteristics, we think the recommendation to monitor turtle populations is reasonable. We have added text to section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS to clarify the scope of our recommended monitoring plan.

Comment: The FS comments that the draft EIS recommends that PG&E conduct goshawk surveys, but does not include the purpose of the surveys. They state that the details of what would be recommended should a nest be found, could be included in the Biological Monitoring and Adaptive Management Plan component of the LHMP, including the forest-wide standard around active goshawk nest, "require limited operating periods adjacent to active goshawk nesting sites until the young have fledged" and wording from the Lassen Monitoring and Evaluation Report (2000) that recommends maintaining 200 acres of high quality habitat around active nests.

Response: We have added text to section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS regarding potential timing and spatial restrictions around active nests, as suggested.

Comment: PG&E questions the intended purpose of our recommendation to monitor key wildlife species not covered under other plans such as neotropical migrants, goshawks, and bats. They further comment that any new construction or major repairs would require surveys for sensitive species in the affected areas.

Response: The list of recommendations provided in section VII.A, *Recommended Alternative*, of the draft EIS was based on the analysis presented in section V, *Environmental Analysis*. In the final EIS, we have shifted all of our recommendations

from section V to section 5.2, *Comprehensive Development and Recommended Alternative*, which should clarify what each of our specific recommendations would entail and the purpose of each recommendation.

Comment: The FS recommends tying our recommended riparian associated bird species count surveys into the riparian shrub vegetation monitoring.

Response: We agree that it may be cost efficient if neotropical bird surveys were conducted in conjunction with the riparian vegetation monitoring. We prefer that PG&E work out the details of our recommended monitoring programs in consultation with the resources agencies.

Comment: The FS recommends that a section for the discussion of protection of known sites of survey and manage aquatic and terrestrial molluscs be added, similar to that on page 178 for plants. The FS comments that many of these aquatic and terrestrial molluscs may be associated with riparian areas/seeps/springs related to leakage from project facilities and maintenance activities by PG&E to eliminate leaks could affect survey and manage species.

Response: We have made the recommended changes to section 3.3.3.2, *Terrestrial Resources*, of the final EIS.

Comment: The FS comments that determinations regarding the effects of the proposal on sensitive species need to be included in the final EIS and have been developed and provided in Appendix B of their comments.

Response: We include our analysis of the effects of the proposed relicensing of the project on FS sensitive species in section V.C.3.b, *Terrestrial Resources*, of the draft EIS. We have also updated appropriate sections of the final EIS to include information provided in the revised Biological Evaluations filed by the FS by letter dated November 20, 2003, which reflect the conditions of the PRCT agreement and the final 4(e) conditions.

Comment: The FS comments that the Pit 3 230-kV transmission line is still within the project boundary and therefore should be included in the vegetation management plan, until such time that the line is no longer part of the project.

Response: The vegetation management plan would apply to all project lands. This would include transmission lines that are located on National Forest System Lands but determined to be non-jurisdictional, until such time as the proper approvals are received by the Commission. Such approvals would form the basis for removal of land associated with the transmission lines from the project boundary, and the Commission would no longer

enforce implementation of the vegetation management plan on the land that is removed. Our expectation that the vegetation management plan would include transmission lines, as appropriate, was indicated on page 179 of the draft EIS, and is now reflected in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS.

Threatened and Endangered Species

Comment: The Pit River Watershed Alliance comments that it is imperative that all species subject to Section 7 of the Endangered Species Act (ESA), throughout the entire watershed be analyzed for potential impacts in the EIS.

Response: Under Section 7 of the ESA, we assessed the potential site-specific and cumulative effects on all listed species that could potentially be affected by continued operation of the project. We requested formal consultation with FWS on our findings. FWS issued a Biological Opinion for this project on October 15, 2003, concluding the formal consultation process.

Comment: PG&E comments that they accept the draft EIS recommendation to develop and implement a protection plan for valley elderberry longhorn beetle (VELB) with the understanding that surveys indicate that there is very little elderberry in the project affected area and the project is located outside the described range of the VELB. Additionally, PG&E requests clarification of what the Commission staff means by management measures.

Response: Our use of the term “management measures” pertains to those measures necessary for the operation and maintenance of the project. PG&E personnel that are responsible for such activities should be aware of appropriate measures to protect the VELB. We have clarified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, as requested.

Comment: PG&E comments that they agree to work with the FS, FWS, and CDFG to map suitable habitat for northern spotted owl, but their obligations need to be defined so that PG&E is not held responsible for mapping and managing all northern spotted owl habitat in the Pit River Canyon. PG&E suggests that the mapping and management requirement be linked to the proximity of project features, such as 0.25 mile outside the project area.

Response: We have clarified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, to link our recommendation to the distance within which project-related activities (e.g., habitat alteration or noise disturbance due to construction or maintenance) could affect northern spotted owl. The appropriate distance should be determined in consultation with FWS, FS, and CDFG.

Comment: The FS comments that the conflict between 11 active nest territories (p. 198) and 10 nesting pairs of bald eagles (p. 205) needs to be resolved. The FS also comments that information from the 2002 Habitat Mapping Study, not available at the time of the draft EIS, need to be incorporated to include a discussion of habitat changes resulting from higher test flows.

Response: We have corrected the discrepancy and added text concerning the results of the Habitat Mapping Study to section 3.3.4, *Threatened and Endangered Species*, of the final EIS.

Comment: The FS comments that our support of PG&E's instream flow recommendation based on the conclusion that increased flows reduce bald eagle foraging habitat (p. 204) is somewhat in conflict with the statement on p. 209, "Modest increases in flows would be likely to maintain the prey base as well as foraging opportunities and contribute cumulative benefits to the bald eagle." The FS comments that we had not had the opportunity to review the 2002 controlled flow study, and the FS has not had the opportunity to tie the various habitat studies together and develop new flow conditions. They state that assurance of adequate bald eagle foraging would be one factor in determining final 4(e) flow conditions.

Response: We have added discussion of the Habitat Mapping Study to section 3.3.4.2, *Threatened and Endangered Species*. Results of the study indicated that higher flows would not substantially increase the area of habitat defined as suitable for bald eagle foraging, except at the Deep Creek site. We have updated our analysis to reflect the flow regime proposed by the PRCT and included in the FS final 4(e) conditions.

Comment: The FS comments that they agree with our recommendation that existing measures would need to continue and additional measures may be needed to respond to changes in bald eagle nest locations.

Response: Our recommended biological monitoring and adaptive management plan would provide a basis for determining whether or not additional measures may be needed to protect fish and wildlife, including the bald eagle.

Comment: PG&E comments that they agree that the 1993 BCMP would need to be updated to include the many monitoring plans proposed as license requirements and it should include any monitoring requirements of the updated IBEMP, as well as provisions to discontinue monitoring studies that have provided enough information to provide reasonable assurance that project effects can be determined.

Response: We have modified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, as suggested. We agree that one aspect of

adaptive management that should be considered in developing our recommended monitoring and adaptive management plan is the discontinuance of monitoring that is no longer providing relevant information.

Comment: The FS comments that the cumulative effects analysis on page 209 of the draft EIS should address the miles of project transmission and powerlines as they have the potential for cumulative effects to bald eagles. This section also does not address the recreational use overlap in the spring and early summer period, though it would be addressed in the revision of the IBEMP, and may be more appropriate at that level.

Response: We defined our geographic scope for our cumulative effects analysis for bald eagles in Scoping Document 2, issued by the Commission on July 31, 2002, and in section V.B.1, *Geographic Scope*, of the draft EIS. We limited our analysis to the Pit River from Pit Falls to and including the Pit 6 reservoir, because this is the known foraging range for bald eagles known to nest near the project. We did not include the miles of transmission lines that receive energy from the project powerhouses in our geographic scope because these transmission lines would continue to conduct energy with or without the Pit 3, 4, 5 Project. We acknowledge that transmission lines can pose a threat to raptors, including bald eagles, but we consider such threats to be site specific, rather than cumulative.

The Commission has determined that transmission lines formerly associated with this project are no longer jurisdictional. However, before those transmission lines on National Forest System Lands can be removed from the project boundary, PG&E must provide the Commission with documentation that appropriate approvals have been obtained from the FS. If the transmission lines still within the project boundary remain so when the IBEMP is being updated, we would consider it appropriate to include in that plan a section that ensured that the most recent federal guidelines for protection of raptors from electrocution and tower and conductor strikes are implemented.

We consider the effects of recreational use of project related facilities on bald eagles to be a site specific effect, and have addressed this issue in section 3.3.4, *Threatened and Endangered Species*, of the final EIS. We agree with the FS that the addressing specific measures to minimize the effects of recreation during the bald eagle breeding season would be more appropriately addressed in the updated IBEMP.

Recreational Resources

Comment: The FS agrees with our recommendation for a recreation management plan and suggests that it follow the general process and framework for "Limits of Acceptable Change" as used by the FS, but modified for non-wilderness areas, which would incorporate much of the work already done by the PRCT. CalTrout and TU also agree with the

recommendation for a recreation management plan and a recreation monitoring plan.

Response: We appreciate the concurrence of these entities with our recommendation for PG&E to develop a recreation management plan. In the final EIS, we make recommendations regarding the elements to be included within the recreation management plan. Although we do not specifically recommend that the Commission require PG&E to follow the general process and framework for "Limits of Acceptable Change" as the FS suggests, such a framework would be a reasonable basis for development of our recommended plan. We recommend that the recreation management plan be developed in consultation with the FS, FWS, NPS, CDPR, CDFG, SWRCB, the Tribe, and the Hat Creek TAC and would not object to the application of this framework, if PG&E and the consulted parties agree to this approach.

Comment: The FS is concerned that if Lake Britton is brought up to higher levels than elevation 2,736.5 feet during the recreation season (Memorial Day through Labor Day), day use areas would be greatly reduced by flooding. The intent of the FS is to formalize the existing standard operating procedure, not prohibit lake operations due to emergencies and flood events. In its final Section 4(e) condition, the FS specifies that the maximum normal water surface elevation shall be 2,737.5 feet (NGVD) beginning on the Saturday preceding Memorial Day Weekend or until there is no flow passing the Pit 3 dam in excess of the required minimum flow for the Pit 3 bypassed reach, whichever is later. This maximum water level constraint would be in place until April 21 of the following year, at which time the maximum allowable Lake Britton water elevation would decrease to 2,735.5 feet (NGVD). These maximum water elevations are consistent with the PRCT agreement on project operations and flows. CDPR also recommends that PG&E continue with its normal lake operation during the recreation season, which entails a maximum water level of 2,736.5 feet.

Response: We indicated in the draft EIS that water levels above elevation 2,736.5 feet typically occur during the spring, when recreational use is low. The reason for such high lake levels is usually associated with naturally occurring high flow events which are beyond the control of PG&E. Consequently we did not recommend implementation of a maximum lake level elevation restriction during the summer. Upon reconsideration, we now conclude that, although unlikely, project operations during the summer could result in water levels that result in flooding of recreational facilities at Lake Britton (e.g., if the bladder gates are not deflated in a timely manner when inflows exceed the hydraulic capacity of the operating turbines). Therefore, we now recommend that PG&E operate the project such that the maximum normal lake level not exceed 2,737.5 feet (NGVD) during the recreation season, except in emergencies and circumstances beyond the control of PG&E, such as flood events. This maximum restriction is consistent with the proposed restriction specified in the PRCT agreement, which the FS, CDPR, and PG&E are signatory

parties and we conclude that such a restriction would be protective of the recreational facilities and opportunities that each of these parties provides at Lake Britton. We have revised section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS accordingly.

Comment: CDPR and the FS agree with our recommendation that PG&E maintain a minimum surface elevation of 2730.5 feet during the primary recreation season (Memorial Day to Labor Day). PG&E suggests rewording our recommendation as follows: "The minimum allowable operating elevation for Lake Britton during the period of Memorial Day through Labor Day shall be 2,730.5 feet NGVD except in the event of emergencies that require lowering the elevation for public or facility safety." Subsequent to these comments on the draft EIS, the PRCT agreement and final 4(e) conditions specify a year-round minimum water surface elevation at Lake Britton of 2,731.5 feet (NGVD), except during specified emergencies.

Response: We agree with the minimum Lake Britton water level restriction specified in the PRCT agreement and the FS final 4(e) conditions and have modified section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS accordingly.

Comment: The FS comments that the Clark Creek Lodge and its recreational facilities should be deleted from the text, since the facility is not open, was not open in 2002, and is for sale in print media and on the Internet.

Response: We have adjusted the text in section 3.3.5.1, *Recreational Resources*, of the final EIS, so that Clark Creek Lodge is not described as a public facility.

Comment: The FS comments that the Big Bend Hot Springs Resort should not be listed as a public recreation opportunity because it has no permit to operate as a public campground and is not inspected for standards of safety and cleanliness for public occupancy.

Response: Big Bend Hot Springs Resort is an existing privately owned recreational facility and we continue to list it in the final EIS. We make no judgement regarding whether or not it has obtained applicable approvals for its current operation.

Comment: The FS comments that table 35 should reflect that Dusty Campground includes day-use parking sites and is a high use day-use area due to the attraction of the beach and nearby boating use.

Response: We have adjusted the text of the referenced table in section 3.3.5.1, *Recreational Resources*, of the final EIS, to specify that Dusty Campground has day-use parking sites.

Comment: The draft EIS states that the goal of our recommended recreational measures at Lake Britton is to enhance facilities without expanding the capacity to avoid disturbance to bald eagle and damage to sensitive cultural resources. The FS agrees with our conclusion that many of the Lake Britton facilities are at or near capacity and support the upgrade and expansion of existing facilities over creation of new facilities. The FS is working with PG&E and other parties to evaluate existing sites for improvement and modification. The Tribe comments that recreational facilities and uses are already developed to capacity in the APE and new facilities should not be established, but existing facilities should be managed better to avoid further interference with traditional cultural resources and uses.

Response: We recommend in the draft EIS that PG&E, as part of the recreation monitoring plan, monitor and address any potential adverse effects on sensitive resources, such as cultural resources, over the term of the license. Also, as part of the recreation management plan, we recommend that PG&E assess the potential effect of any proposed facilities on the project area's sensitive resources and develop appropriate site-specific protection measures, if needed. These measures would provide a basis to ensure that management of recreational facilities under Commission jurisdiction is sufficient to protect cultural resources, or whether additional management measures are warranted.

Comment: CDPR believes that a way to increase capacity within the project area while avoiding disturbance to bald eagles and cultural resources is to provide a formal group camping facility within the project area, consistent with the McArthur-Burney Falls Memorial State Park General Plan. The FS supports CDPR's request for funding for development of a group camp at McArthur Burney Falls State Park and encourage us to also consider an additional amount of funding to replenish the beach sand at the State Park day use area, which is depleted by water fluctuations.

Response: As in the draft EIS, our final EIS does not recommend that PG&E provide additional funding for upgrades to Burney Falls State Park, such as a formal group camping area, other than to ensure that buoys are provided at the swimming area. PG&E provided \$365,000 in 1995 as a contribution to implementation of the park's General Plan. If, during the development of our recommended recreation management plan, PG&E and the consulted parties (which would include CDPR, the FS, and the Tribe) agree that formal group camping at the park would be a measure to help address capacity issues, we would not object to implementation of such an enhancement. However, we would expect that any new overnight capacity that is developed at the park would apply to the increase in overnight

capacity that is specified in the FS final 4(e) condition No. 26, which calls for an increase of 39 campsites over the term of a new license.

Comment: The FS agrees with us that recreational access to upper Lake Britton and the fish barrier areas should be continued. PG&E states that the vehicle access at the Hat Creek fish barrier has been gated due to problems with unauthorized use and associated damage to the area's sensitive resources. PG&E states that a public notice was published providing notification of the road closure and encouraging the public to access the area on foot. The FS applauds PG&E's efforts to restore damage in the fish barrier area caused by off-road vehicles and agrees that there are a number of roads in the area that should be closed to the public; however, the FS disagrees that vehicular access to the fish barrier should be eliminated. The FS comments that this issue should be clarified and addressed in the final EIS. The FS final 4(e) condition No. 27 specifies that rehabilitation needs for this road be addressed in its Roads and Facilities Management Plan. Portions of this road are not on National Forest System land, so the FS also included this road in its final 10(a) recommendation No. 10.

Response: We continue to recommend that PG&E provide recreational access to the fish barrier area, as discussed in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS. In addition, we recommend in the final EIS that the provision of access on this road, whether it be foot traffic or vehicular access, and the need to upgrade, and the level of maintenance on this access road be resolved as part of the development of the road management and maintenance plan. This road would also be subject to the provisions to protect cultural resources that may come out of the recreation management plan or the HPMP, such as bouldering along the access route.

Comment: PG&E accepts our recommendation to improve and maintain the car-top boat launch facility near the gasline crossing of Lake Britton, and recommends that this recreational facility remain open from the last Saturday in April (beginning of trout season) through the end of December (encompassing the majority of the waterfowl hunting season). However, PG&E recommends that this facility be closed from January through the end of April to prevent damage to sensitive resources in the vicinity.

Response: Our recommendation in the draft EIS called for this access site to be open to the public until the end of December, but did not specify when it should initially open. PG&E's recommendation to open it at the beginning of trout season is reasonable and we have modified section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, accordingly.

Comment: PG&E accepts our recommendation to evaluate management options for the Ferry Crossing area. PG&E points out this area is becoming increasingly popular with walk-

in and boat-in recreationists, which is creating problems due to the lack of sanitary facilities and trash receptacles. PG&E would work with the Tribe and other entities to develop plans that protect sensitive resources in the area. The FS also supports our recommendation for improved recreational opportunities and resource protection at the Ferry Crossing. The FS final 4(e) condition No. 26 lists the North Ferry Crossing as a possible location for a day use area.

Response: We recognize that management options for this area should consider the documented increased use of this area and the need to protect sensitive resources. Our recommendation to include management options for this area in the recreation management plan would allow for consultation of PG&E with the Tribe, the FS, and other appropriate entities to ensure that cultural and natural resources are protected, to the extent practicable.

Comment: In response to our recommendation in the draft EIS that PG&E provide pedestrian warning signs on Clark Creek Road to enhance the safety of recreationists crossing the Pit 3 dam, PG&E indicates that it would seek cooperation from Shasta County regarding pedestrian warning signs at Clark Creek Road.

Response: Since Clark Creek Road is a county road, we agree that PG&E should consult with Shasta County prior to installing or funding the installation of any pedestrian warning signs along Clark Creek Road and have modified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, accordingly.

Comment: PG&E accepts our recommendations in the draft EIS that pertain to enhancements at the Dusty Campground and indicates that plans are currently being developed to implement the enhancements. The FS final 4(e) recommendation No. 26 is also consistent with our recommendation.

Response: We applaud PG&E's proactive approach to implementing enhancements at the Dusty Campground and look forward to reviewing the plan for these enhancements when the recreation management plan is filed with the Commission.

Comment: PG&E indicates that it accepts our recommendation in the draft EIS to implement improvements at the North Shore Campground, and lists many of the specific items that we recommend at this facility. PG&E indicates that consideration is being given to providing firewood and ice for sale by the campground host, providing additional day use parking, and maintaining seasonal restrictions to protect nesting bald eagles. However, one item that we recommend be implemented, installation of flush toilets and showers, is not mentioned by PG&E in their comment.

Response: The FS approach to providing additional day-use opportunities, specified in final 4(e) condition No. 26, calls for PG&E to provide incremental capacity for 100 people at one time, with the North Shore Campground serving as a possible site for such expansion, along with the Pines Picnic Area, and the North Ferry Crossing. We agree with the FS approach to set a target for increased day-use capacity and allow the target to be met by considering several alternative sites. This would allow maximum consideration to be given to protecting sensitive cultural sites and minimizing effects on nesting bald eagles. We continue to recommend that PG&E provide flush toilets (to replace the three, double-vaulted restrooms) and showers at the North Shore Campground. Modernizing the restrooms would reduce the potential for septic contamination of Lake Britton, and providing showers should reduce the frequency of campers using Lake Britton for bathing purposes. Both measures would be protective of Lake Britton water quality. We also continue to recommend that the host at the North Shore Campground provide firewood (either for sale or free of charge) for use by campers, to reduce inappropriate firewood gathering on adjacent land. If our recommendations pertaining to other improvements at the North Shore Campground are included in a new license that may be issued for this project, PG&E would be required to implement the measures, or provide site-specific reasons why a measure could not be implemented.

Comment: PG&E accepts our recommendations in the draft EIS to move the “no boating” buoy line at Lake Britton closer to the dam, implement enhancements at the Jamo Point boat launch area, explore options to address capacity issues at Lake Britton, and assess recreational boating management options to help control potential recreational use conflicts. However, PG&E points out that any new boating restrictions or regulations would need to be approved and enforced by Shasta County.

Response: We appreciate PG&E’s cooperation in implementing these measures. We agree that some, but not all, of the potential recreational boating management measures that could be implemented would require approval of Shasta County prior to implementation. Therefore, we have added Shasta County to the list of consulted entities during the development of the recreation management plan.

Comment: The FS elaborates on their preliminary 4(e) condition concerning modifications to the ADA-accessible fishing platform at Jamo Point. The FS comments that they would like PG&E to make modifications to the fishing platform side rails that would make it more conducive to fishing by children and disabled people and to redesign the fishing pier so the pier would fluctuate with the lake levels and improve fishing at that site.

Response: In the final EIS, we recommend that PG&E provide measures to enhance the existing Jamo Point boat launch area, including designating parking spaces for vehicles with

trailers; providing a picnic table between the restroom and shoreline; and developing a potable water source at Jamo Point boat launch or Pines picnic area. We do not recommend that PG&E be required as part of the license to modify the existing fishing platform, as suggested by the FS, because it currently provides suitable access for anglers, including those with disabilities, and no evidence has been provided to show that there is a need for such improvements. Further, adjustments to the side rails of the fishing platform or redesign of the fishing pier that would enable it to fluctuate with lake levels could be costly. Although we do not recommend that enhancements to the fishing platform be required in any new license that may be issued for this project, such enhancements could provide recreational benefits and we would not object to them if, during the development of the recreation management plan, PG&E and the consulted parties agree to such a measure.

Comment: The FS thinks many of the needs of visitors in the upper Lake Britton portion of the project could be met at the existing Hat Creek Park, which is located on lands owned by PG&E but outside the project boundary and operated by Shasta County. The County of Shasta has submitted a request to PG&E to continue to operate Hat Creek Park and the County has submitted grant applications to rehabilitate this site. The FS requests that PG&E involve members of the PRCT and other interested parties in any plan development for Hat Creek Park.

Response: We note the FS's request for PG&E to involve the PRCT in the planning of potential Hat Creek Park enhancements and acknowledge the benefits of collaborative planning. However, as we noted in the draft EIS, Hat Creek Park is located outside of the project boundary and is not associated with project lands and waters; therefore, we do not recommend that PG&E be responsible for recreational enhancements at this facility as part of a license requirement. Our recommended recreational enhancements in the vicinity of the Hat Creek fish barrier and the gasline crossing of Lake Britton would meet the needs of visitors to the upper end of Lake Britton. The details of these, and all other recreational enhancements that we recommend would be included in a recreation management plan. We recommend that this plan be developed in consultation with the FS, FWS, NPS, CDPR, CDFG, SWRCB, Shasta County, the Tribe, and the Hat Creek TAC. Most of these parties were participants in the PRCT discussion.

Comment: The FS agrees with our conclusion that a new trail at Clark Creek is not necessary and the FS supports the recommended action to maintain and upgrade existing trails in the project boundary surrounding Lake Britton to assist recreation access and alleviate impacts to resources.

Response: We appreciate the FS concurrence with our analysis of the need for a new trail at Clark Creek.

Comment: The FS agrees to eliminate its preliminary 4(e) condition for an interpretive driving loop on the north side of Upper Lake Britton and support the development of a comprehensive interpretive plan, the recreation management plan, and the road management plan.

Response: We appreciate the FS concurrence with our analysis of the need for an interpretive driving loop. Our recommended interpretive and education plan, which would be included in the overall recreation management plan, should enable the public to gain information about important aspects of the project area.

Comment: The FS disagrees with our conclusion on page 244 of the draft EIS that PG&E should not be required to create speed management zones on Lake Britton because it is the county's responsibility. The FS points out that elsewhere in the draft EIS, we support continuation of existing speed limits to protect bald eagle and its habitat as well as the inclusion of measures in the recreation monitoring plan to assess the potential effect of boating use on bald eagles. The FS believes it is the responsibility of the Commission, Interior, licensee, and the FS to protect threatened species habitat from project-induced recreation that can degrade that habitat.

Response: We encourage PG&E to work with Shasta County to help assess, update, and publicize the speed zones, as necessary, to help limit potential adverse effects of boating use on bald eagle populations and shoreline erosion from boat wakes within the project area. We agree that the Commission should ensure that measures are taken to ensure that bald eagles are protected, to the extent that such measures are within the Commission's jurisdiction. However, we do not recommend that PG&E create any speed management zones, because it is the county's responsibility, and, as such, beyond the Commission's jurisdiction. The FS final 4(e) condition No. 26 calls for PG&E to make recommendations to Shasta County pertaining to establishing speed management zones, which we support.

Comment: The FS clarifies its 10(a) recommendations on extending the season of the host at Jamo Point through the end of September. The objective of this recommendation is for the host or other PG&E staff to continue regular cleaning of the restroom facility and general area policing for problems with trash and overnight occupancy *during weekends* through the end of September.

Response: We agree with the FS that weekend use of Jamo Point during September would necessitate servicing of sanitary facilities, albeit at less frequent intervals. Therefore, we now recommend in the final EIS (section 5.2, *Comprehensive Development and Recommended Alternative*) that PG&E ensure that rest rooms are cleaned and trash receptacles emptied following weekends in September, and that this area be periodically inspected during September weekends to minimize the likelihood of overnight occupancy

and inappropriate public behavior. We consider it appropriate for PG&E to determine how to most efficiently staff the implementation of this measure.

Comment: PG&E accepts our recommendation to construct a day-use fishing area at the Pit 3 powerhouse tailrace. The FS supports our recommendation to have the licensee develop a day use area at the Pit 3 tailrace.

Response: We appreciate PG&E's cooperation in implementing this measure.

Comment: PG&E does not support the development of a day use facility or lifting the boating restriction at either Pit 5 or the Tunnel Reservoir due to very rapid flow through periods and associated currents, but proposes to improve notification and signage plan for these areas warning of the hazards. The FS supports our recommendation to develop a day use area at Pit 5 or Tunnel Reservoir as part of the recreation management plan. The FS comments that they would work collaboratively to develop areas that would not conflict with project operations and to designate a boating season in order to protect known bald eagle sites.

Response: In the final EIS, we continue to recommend that PG&E provide a day use facility at either the Pit 5 or Tunnel Reservoir area in order to provide more formalized public recreational access within this area of the project. The public currently has informal access to both the Pit 5 and Tunnel reservoirs and formalizing the recreational access at either of these locations would enhance existing usage. We agree that signage warning of potential safety hazards (e.g., strong currents and potential for changing water levels that would make these locations inappropriate for swimming) for the boating and non-boating public is appropriate and expect safety issues to be addressed as part of the consultation associated with the development of the recreation management plan and during consultation with Shasta County to potentially modify the existing boating restrictions.

Comment: PG&E accepts our recommendation to improve parking at the Talus siren and implement trail improvements at Powder Spur, Delucci Ridge, Malinda Gulch, and Oak Flat provided they are limited to protection of resources and erosion control to prevent additional environmental problems. PG&E notes that, in 2001, it improved the trail at the Pit 3 dam by removing the old wooden steps and replacing them with steel steps to improve safety and accessibility.

Response: On page 250 of the draft EIS, we recommended that PG&E provide signage to designate trails, improve and provide adequate parking at each trailhead, provide trash receptacles at each trailhead, provide sanitation facilities at appropriate locations, and stabilize soil erosion at the specified trails. We indicated on page 372 of the draft EIS that the current informal access at several of the indicated trails traverse steep slopes, are

dangerous, and generate erosion. At such locations, addressing these issues may be costly. However, we conclude that each of our recommended trail improvements would serve to protect resources or control erosion. We acknowledge that all of our recommended measures may not be needed at each trail. Therefore, we added the qualifier “as appropriate” to the detailed description of our recommendation in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, and would expect the site-specific appropriateness of each measures to be addressed with the consulted entities during the development of the recreation management plan.

Comment: PG&E accepts trail improvements at Rock Creek to provide access to Pit River, and notes that this site could also serve as a whitewater boater put-in location. However, PG&E states that if the purpose of this recommendation is to provide access to Rock Creek, it has concerns because Rock Creek is an important trout spawning area and closed to angling. A formal trail along Rock Creek could encourage illegal angling and disruption of spawning activities.

Response: Our intention is to facilitate public access to the Pit 3 bypassed reach, not Rock Creek. The vicinity of Rock Creek is less steep than elsewhere and such topography would facilitate establishment of a formal trail to the river. We expect that the final location of this trail, which would be included in the recreation management plan after consultation with appropriate stakeholders, would take into account the protection of sensitive resources, including spawning habitat within Rock Creek.

Comment: PG&E feels that our recommended FS-approved safety analysis of up-ramping rates to protect public safety of recreationists can be addressed under our recommended spill management plan, but points out that its ability to control up-ramping rates is limited. Up-ramping rates are a function of spillage at the project dams, and during such times, PG&E has limited control over the flow. PG&E indicates that its current practice regarding anticipated PG&E-controlled spills is to conduct an aerial inspection and road inspection of the affected reach to provide a warning of an impending spill.

Response: We recognize that there are limitations to PG&E’s ability to control the up-ramping rates associated with the onset of spillage. PG&E has some ability to control the rate of spill increase by possibly adjusting the inflatable dam crest at the Pit 3 dam, or by adjusting the flows through each of the powerhouses (which would, in turn, vary the rate at which spill occurs at each of the project dams). The PRCT agreement on the project flow regime specifies that up- and down-ramping rates would typically be 0.5 feet per hour or less. This up-ramping rate, along with the plan to control out-of-season spill events (also included in the PRCT agreement) should be sufficient to protect recreationists. PG&E’s current practice to visually inspect each reach for recreationists prior to a spill would provide some measure of protection from rapid up-ramping, and we suggest that PG&E

continue this procedure. However, we consider there to be increased potential risk from increasing flow rates if recreational boating releases occur during August or September, and have modified our recommendations to include provisions for safety of all river users to be addressed if scheduled recreational releases are implemented. We modified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, to reflect our new recommendation.

Comment: The FS appreciates our support of the 4(e) condition for the Ruling Creek dispersed area which includes provisions for the realignment of the access road into this area away from the river's edge, because the existing roadway is inducing erosion. The FS wants to be certain that the final EIS specifically includes reference to this need at Ruling Creek. PG&E accepts our recommendation pertaining to enhancements at the Ruling Creek dispersed camping area and sees this site as one of the very few sites in the Pit River Canyon that could be developed with minimum risk of damaging sensitive resources.

Response: We appreciate PG&E's support for the implementation of this measure. On page 88 of the draft EIS, we indicated that we recommend that site-specific erosion and sedimentation control measures that pertain to new and existing recreational sites where enhancements are proposed should be included in the recreation management plan. Therefore, the proposed site design for the Ruling Creek dispersed camping area would take into account the need to realign the access road to control erosion and sedimentation into the river. Should portions of the road that are now near the river be realigned, we would expect the plan for this site to include stabilization and restoration measures for the former roadway. We modified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, to clarify our expectations that recreation-related erosion and sedimentation control measures should be addressed in a site specific manner in the recreation management plan. However, since there are tunnel spoil piles in proximity to the Ruling Creek dispersed camping area, erosion and sedimentation control measures that are developed for this area should be coordinated with development of measures that would be included in the spoil pile management plan.

Comment: PG&E indicates that it is willing to consider developing a campground in the Pit 5 reach providing a site can be found that would have no or minimal impact on sensitive resources, does not conflict with neighboring land owners, is compatible with desired recreation experiences, and is project related. The FS comments that during field work conducted by members of the PRCT, suitable campground sites were found adjacent to the Pit 5 reach and within the project boundary but outside the "pristine" portions of the reach. The FS would like us to reconsider the FS 10(a) recommendation for a developed site in the lower project reaches near Big Bend, since they feel that recreation trends indicate a future demand for developed site camping. In its final 10(a) recommendation No. 8, the FS provides evidence that supports its conclusion that there is already an existing demand for a

greater amount and a higher development level of overnight accommodation at the lower Pit River reaches.

Response: As stated on page 252 of the draft EIS, we do not recommend that PG&E develop new campground areas at this time within the Pit River Canyon. As stated in the draft EIS, our recommendations are focused on the expansion and upgrade of existing facilities to accommodate recreational use in order to help limit the potential adverse effects of recreational use on sensitive resources in the project area and help maintain the primitive and semi-primitive nature of the Pit River Canyon area. In the draft EIS, we specifically recommended that PG&E explore options to provide primitive camping areas within or adjacent to the project boundary. It may be more difficult to find a more formal developed campground site that does not conflict with natural or cultural resource values. However, based on the information provided by the FS, we can not rule out the possibility that such a site could be found. Consequently, we have modified the description of our recommendation in section 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, to indicate that PG&E should develop a plan that assesses the feasibility of providing camping areas within or adjacent to the project boundary. Such areas could include both primitive and more formal camping areas of varying sizes. We agree that there appears to be a demand for increased overnight accommodations that are available to the general public near the Pit 5 reach. However, our responsibility is to provide for reasonable public access to project lands and waters. To the extent that this can be accomplished by establishing camping areas near project waters, we can support such measures.

Comment: The FS reiterates the need for trash receptacles at whitewater boating put-in and take-out locations in addition to the need for potable water source in the river reaches. They state that this could be accommodated at the Pit 3 or 4 powerhouses, which already have potable water for employees.

Response: We recommended on page 247 of the draft EIS, as part of the day-use area at the Pit 3 tailrace, that PG&E provide facilities, such as an accessible toilet, potable water, trash receptacles, and parking. Although we do not disagree that there is a need for trash receptacles at other boating put-in and take-out sites, we expect that the placement of trash receptacles at project recreation-related sites could be specified in the recreation management plan, following consultation with appropriate entities. At some locations, it may be considered appropriate to implement a “pack it in, pack it out” approach to litter control.

Comment: SWRCB states that the Water Quality Control Plan identifies contact recreation as an existing beneficial use and canoeing and rafting as a potential beneficial use of the Pit River. SWRCB comments that the Commission “... does not have the

authority to prohibit the protection of the water contact and potential boating beneficial use.” That determination is reserved to the state through the Clean Water Act. According to SWRCB, elimination of whitewater boating opportunities in the Pit River is inconsistent with the Water Quality Control Plan.

Response: We agree that it is the responsibility of the SWRCB to ensure that relicensing a hydroelectric project would comply with applicable state water quality standards. This is accomplished through the issuance of water quality certification, with accompanying conditions. Our analysis on page 259 of the draft EIS indicates that recreational boating flows are currently available for up to an average of 77 days a year at the Pit 3 reach, 33 days a year at the Pit 4 reach, and 38 days at the Pit 5 reach. Our recommendations in the EIS are intended to enhance the existing boating opportunities by having PG&E provide real-time and peak flow information for the Pit 3, 4, and 5 reaches to inform the public about the suitability of flows for recreational activities, including boating and angling. We are not recommending the elimination of whitewater boating opportunities.

Comment: SWRCB comments that the Whittaker and Shelby flow study for recreation provides some information about wadeability of the Pit River, but does not provide information about angling success in relation to flow.

Response: Although the Whittaker and Shelby (2003) study provided anecdotal observations regarding angler success relative to different flows, we expect that meaningful data regarding angler success at specific flow regimes could only be collected during implementation of the new flow regime, as specified in any new license that may be issued for this project. This was a fundamental basis for our recommendation for angler surveys to be conducted in conjunction with fish and invertebrate monitoring.

Comment: AWA, Shasta Paddlers, and Chico Paddleheads comment that the draft EIS cites the existing whitewater opportunities associated with spill as a reason to not provide whitewater releases. AWA, Shasta Paddlers, and Chico Paddleheads comment that winter boating opportunities, such as spill, cannot mitigate for lost summer whitewater flows, since there is a distinction in both user group composition and use numbers between winter and summer whitewater boaters.

Response: We acknowledge that under existing conditions, flows suitable for whitewater boating occur more often during the colder months than during the summer. We re-analyzed the hydrological record for water years 1975 through 2001 and found the following: of the average of 77 days per year that are suitable for whitewater boating at the Pit 3 reach, 24 occur during the winter (December through February), 40 occur during the spring (March through May), 8 occur during the summer (June through August), and 5 occur during the fall (September through November); of the average of 31 days per year

that are suitable for whitewater boating at the Pit 4 reach, 11 occur during the winter, 18 during the spring, and 1 day each during both the summer and fall; and of the 38 days per year that are suitable for whitewater boating at the Pit 5 reach, 12 occur during the winter, 24 during the spring, 1 during the summer, and 1 during the fall. Some recreational boating opportunities occur during all four seasons at all three project reaches under current conditions. This frequency may change to some degree under a new flow regime, but we still expect that some, albeit limited, boating flows would be available in each reach during each season. This emphasizes the importance of publicizing when whitewater boating flows are available, consistent with our recommendations.

Comment: AWA, Shasta Paddlers, and Chico Paddleheads comment that the draft EIS cites potential effects of whitewater releases on aquatic resources as a reason to not provide whitewater releases. AWA, Shasta Paddlers, and Chico Paddleheads comment that none of the instream flow studies designed to investigate the effect of alternative flow regimes on aquatic resources detected negative impacts due to whitewater releases. AWA, Shasta Paddlers, and Chico Paddleheads agree with the attached algae study conclusions that whitewater flows would have the potential to scour attached algae, but they disagree with the study's claims regarding the ecological ramifications on the Pit River aquatic community.

Response: The FS consultant on the foothill yellow-legged frog, Dr. Sarah Kupferberg, agreed with our conclusions regarding the potential negative impacts of dislodgement of algae on tadpoles and the entire benthic macroinvertebrate community (see page 15 of Kupferberg, 2003). She criticized us for not discussing the negative effects of high flow on dislodging egg masses, washing tadpoles downstream into inappropriate habitats, and stranding of tadpoles during the ramp down following whitewater boating flow releases. At the time of the draft EIS preparation, we did not have Dr. Kupferberg's data supporting the negative effects that she notes. However, data is now available that indicates that at flows suitable for whitewater boating (about 1,200 to 1,500 cfs), parts of the foothill yellow-legged frog eggs masses that were observed during the controlled flow study began to fray and detach. PG&E filed its updated foothill yellow-legged frog report with the Commission by letter dated September 25, 2003. In her comments on that report, also filed by the FS with the Commission by letter dated September 25, 2003, Dr. Kupferberg states that the results presented in figure 3 of the PG&E report are especially relevant to the justification for preventing out-of-season peak flows, even during the fall. Figure 3 of the PG&E report indicates that tadpoles are still present in the Pit 4 bypassed reach until at least early September. We share Dr. Kupferberg's concern about scheduled out-of-season releases on the foothill yellow-legged frog, even as late as August and September, because of the potential to wash tadpoles downstream to inappropriate locations.

The PRCT agreement calls for a sequence of data acquisition that could lead to the implementation of whitewater boating flow releases to the Pit 5 bypassed reach. Foothill yellow-legged frog populations appear to be centered in the Pit 4 bypassed reach at this time, but because species presence was documented at two sites in the Pit 5 bypassed reach in 1999, we have similar concerns about potential adverse effects on populations that may occur in this reach. However, we agree that the collection of up to 5 years of baseline data prior to implementing whitewater boating flow releases should provide a more robust basis for deciding if such flows should be implemented. We have revised sections 3.3.3, *Terrestrial Resources*, and 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, to reflect our updated analysis and recommendations pertaining to the ecological ramifications of whitewater boating flows.

Comment: Interior comments that limiting boaters to intermittent spill events and prescribed freshet flows in the winter season is unacceptable. Interior states that its recommended whitewater boating release plan would take into account the demand for whitewater boating in the region, valid fishability constraints, and scientifically based results from the biological studies. AWA, Shasta Paddlers, and Chico Paddleheads also comment that the draft EIS categorically excludes summer whitewater boating opportunities without substantiating evidence supporting this management action.

Response: As indicated in our response to a previous comment, whitewater boating opportunities currently exist during all four seasons at all three bypassed reaches, on average. Summer and fall flows may not be sufficient for whitewater boating during critically dry or dry years. Under the PRCT agreement flow regime, there may be additional whitewater boating opportunities that develop with the new operating protocols, but we do not have sufficient information to quantify any such increases. Based on our review of Whittaker and Shelby (2003), we conclude that angling would be substantially curtailed during releases of flows that would be optimal for whitewater boating. Kupferberg (2003) concludes that out-of-season releases when foothill yellow-legged frog egg masses and tadpoles are present in the Pit 4 reach (May through August) would adversely affect populations of this frog.

Comment: AWA, Shasta Paddlers and Chico Paddleheads comment that in light of our concern for potential adverse effects of summer whitewater flows coupled with feedback from resource agencies, they have revised their request for whitewater boating releases. AWA, Shasta Paddlers, and Chico Paddleheads eliminated their request for whitewater flows in the Pit 3 reach and ask for several summer releases on alternating weekend days annually in the Pit 4 and 5 reaches, consistent with their recommendations that we analyzed in the draft EIS. AWA, Shasta Paddlers and Chico Paddleheads state that their alternative would always provide simultaneous opportunities for angling and swimming and the 10 am to 4 pm release schedule would provide ample angling opportunities before and after

releases.

Response: AWA, Shasta Paddlers, and Chico Paddleheads recommendation for whitewater releases to the Pit 4 and 5 bypassed reaches is similar to its previous recommendations for these two reaches. We continue to conclude that scheduled releases during the summer could adversely effect aquatic biota, including foothill yellow-legged frog, and do not recommend the implementation of such releases without additional baseline data collection at the Pit 5 bypassed reach (where scheduled whitewater boating releases remain a possibility), consistent with the PRCT agreement. Since AWA is a signatory party to this agreement, we assume that AWA concurs with our conclusion.

Comment: AWA, Shasta Paddlers, and Chico Paddleheads comment that in addition to their recommended releases, the EIS should analyze the FS alternative for a fall whitewater release schedule.

Response: We have reviewed the FS revised 4(e) conditions and supporting documentation filed by letter dated May 19, 2003, and find no FS alternative for a fall whitewater release schedule. Consequently, we cannot analyze this alternative. The PRCT agreement, filed by letter dated October 31, 2003, does specify the potential release of whitewater flows during two consecutive weekends in September, with the potential for October releases should boater use warrant, which we have analyzed in the final EIS.

Comment: AWA, Shasta Paddlers, and Chico Paddleheads support our recommendation that PG&E develop and implement a plan for river access on the Pit 3, 4, and 5 reaches, but with the caveat that access improvements be designed to account for multiple recreational uses including anglers, swimmers, tubers, and whitewater boaters. AWA, Shasta Paddlers, and Chico Paddleheads comment that improvements in the vicinity of Ruling Creek should include identification and development of a designated access point to minimize the impacts associated with the current dispersed use. AWA, Shasta Paddlers, and Chico Paddleheads support the proposed improvements in the Pit 4 and 5 reaches including enhancements at the Pit 4 powerhouse site and restricting access to Trailer Road and parking areas only.

Response: Our recommendations for PG&E to provide enhanced recreational access to project lands and waters would facilitate various types of public recreational use, including angling, swimming, tubing and whitewater boating, as appropriate. We expect that the conceptual design for the Ruling Creek dispersed camping area would include identification and development of a designated boater access point, as appropriate, to minimize adverse environmental affects, such as induced erosion, from recreational use.

Land Use and Aesthetic Resources

Comment: The FS interpretation of the 200 vehicles per day trigger that PG&E specifies for implementation of vehicle safety improvements is not consistent with PG&E's subsequent clarification that the threshold is intended as a seasonal (Memorial day to Labor day) average, not a one time threshold as page 274 of the draft EIS suggests. The FS indicates that this discussion may be moot based on the new FS approach to consider whether or not road management objectives are being met as a basis for determining the need for road improvements.

Response: We have modified the text of section 3.3.6.1, *Land Use and Aesthetic Resources*, of the final EIS, to reflect PG&E's intended meaning of the vehicle per day threshold. Our recommendation in the draft and final EIS to monitor road segments and parking areas, through recreation and traffic use surveys, to determine rehabilitation needs would be consistent with the FS approach based on road management objectives.

Comment: The FS comments that the draft EIS discusses determining a trigger based on vehicle use that would induce road upgrades. PG&E and the FS have previously debated the actual number, which by itself does not indicate a safety problem. The FS now recommends an alternative approach to determining when road upgrades are needed. The FS road standards are based on road maintenance objectives and if a road meets those objectives, there is no need to trigger additional reconstruction unless objectives change, according to the FS. However, there would be a need for operation and maintenance of the roads to keep them in compliance with the road maintenance objectives and the road and facilities management plan.

Response: We have modified the analysis in section 3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, to reflect that the FS's new approach to road management in the project area is not based on a vehicle per day trigger, but a set of road maintenance objectives to be developed jointly by the FS and PG&E, consistent with the FS final 4(e) condition No. 27.

Comment: The FS comments that the following should be added to table 40: 1) North Shore Campground road is under special use permit from the FS to PG&E; 2) Dusty Campground road and a portion (east end) of Dusty Campground itself are on PG&E lands; Dusty Campground was reconstructed by PG&E as part of last relicensing and is managed by PG&E under agreement with the FS so PG&E should be "land owner" and eliminate "Not a PG&E facility; 3) add Ruling Creek dispersed site road on National Forest System land—existing graveled road currently eroding into project waters and should be discussed as component of Ruling Creek dispersed camping area; 4) add Pit 4 spoil pile road just below Pit 4 Dam on National Forest System land—small native surfaced road—its use or

abandonment needs to be discussed in the spoil pile management plan; and 5) add Pit 4 valve house road on National Forest System and PG&E lands– existing gravel road forks off of Pit 4 reach of River Road and has a cable gate closure that doesn't meet the FS safety standards.

Response: We agree and have modified the referenced table in section 3.3.6.1, *Land Use and Aesthetic Resources*, of the final EIS, to include the additional road segments. We also reviewed table 1 in the FS final 4(e) condition No. 27, which lists what the FS considers to be project-related roads on or affecting National Forest System Lands, and note that several additional road segments have been added by the FS, including the Pit 3 surge tank road, Pit 4 reservoir spurs, Big Pine Deer Camp road, gravel bar road, the Pit 4 surge tank road, and the bald eagle management area road. Two of these roads (the Pit 3 surge tank road and the Pit 4 surge tank spur) clearly serve project purposes and we have added these two roads to our table listing road segments within the project area. The FS has not provided a basis for us to evaluate which of the remaining road segments serve project purposes. We added these roads to the same table, but added text to our analysis in section 3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, that indicates that although these roads may be near or within the project boundary, there is no indication that they currently, or would in the future, serve project purposes. For such roads, we do not agree that PG&E should be responsible for maintenance and rehabilitation.

Comment: The FS comments that the affected environment section for traffic use in the draft EIS (pages 273 through 276) does not adequately reflect the existing condition of the roads including safety and environmental issues that have been discussed by the FS in previous filings and these issues should be discussed in the final EIS.

Response: We have modified the affected environment in section 3.3.6.1, *Land Use and Aesthetic Resources*, of the final EIS, to include more description of the existing road conditions.

Comment: The FS comments that the first sentence of the first paragraph under project roads (page 286 of the draft EIS) should be changed to include "... for mixed traffic including passenger cars, sport utility vehicles, pickup trucks, fire vehicles, dump trucks, lowboys, and logging equipment." The 3rd sentence should be changed to "The plan would address minimum standards for paving width, design criteria for culverts to meet management objectives, turnout spacing, and designated parking areas," in order to more accurately reflect National Forest System road needs.

Response: We do not agree because this paragraph is intended to reflect what PG&E proposed in its October 11, 2002 response to the REA notice, not what the FS recommends. However, we did modify the text in the following paragraph in section

3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, to accurately reflect the FS's road needs.

Comment: The FS comments that the statement in the first paragraph on page 290 of the draft EIS "... to maintain the roadways to current standards" is not acceptable. The FS requires upgrading of roads on or affecting National Forest System land to meet FS road standards based on road management objectives.

Response: We agree that PG&E should maintain the project roads up to current county, state, or FS standards, depending on the road segment, which is what we intended with the use of the phrase "current standards." We have modified the text of section 3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, to replace this phrase with "current County, State or FS standards, as applicable" in order to clarify the FS's needs. The costs of this routine maintenance should be included as part of the operation and maintenance of the existing project and thus would not add to the overall costs to relicense the project as reflected in section 4.0, *Developmental Analysis*, of the final EIS. The road rehabilitation costs discussed in section 4.0, *Developmental Analysis*, of the final EIS, refer to the expected incremental costs required to implement the road and facilities management plan and do not include routine road maintenance.

Comment: The FS suggests that we may wish to amend portions of the EIS that pertain to our analysis of road needs to reflect the changed approach from using purely road usage numbers to using established road standards and management objectives to determine road development levels.

Response: We agree and have modified the text of section 3.3.6.2, *Land Use and Aesthetic Resources*, in the final EIS to reflect the FS's modified approach to determining road development levels.

Comment: In response to the draft EIS recommended road management and maintenance plan, PG&E comments that they intend to: 1) restrict vehicular access to designated roadways and prohibit off road activities within the project area; 2) consult with the FS, Tribe and other interested agencies to develop road standards, specifics for road rehabilitation, and maintenance standards; and 3) consult with the FS, CalTrans, and Shasta County to develop interim measures to address the current condition of the intersection of Jamo Point/Pines picnic area access road with State Route 89.

Response: We have modified the text in sections 3.3.6.2, *Land Use and Aesthetic Resources*, and 5.2, *Comprehensive Development and Recommended Alternative*, of the final EIS, as appropriate, to reflect PG&E's comments on our recommendations.

Comment: The FS comments that they agree that ORV use is causing damage in the vicinity of the western portion of lower Hat Creek and the FS recognizes that PG&E can not resolve the issue alone. Though they are not requesting funding, the FS proposes, as their part to resolve this problem, to do any or all of the following: 1) decommission less than 2 miles of existing dirt track accessing PG&E lands and project waters; 2) block road junctions, install water bars and other water directing structures to redirect water off dirt tracks and avoid erosion; 3) obscure dirt tracks through ripping or other measure to minimize long-term erosion; 4) remove culverts; 5) implement an ORV closure to allow an avenue for citing offenders; 6) sign area of closure or other restrictions; 7) implement FS patrols of National Forest System land to discourage inappropriate use and cite offenders; and 8) notify the public of changes in ORV use policies through news releases or other media.

Response: We agree that implementation of some or all of the recommended FS measures could help to address the ongoing erosion and damage. Section 3.3.7.2, *Cultural Resources* and 3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, reflects the FS commitment to help resolve the ORV issue in the project area.

Comment: The FS comments that they have eliminated the 4(e) condition requiring a law enforcement and patrol plan and have incorporated the intended elements into the HPMP and recreation management plan that would be part of the LHMP. The FS lists its resource objectives that require some type of enforcement capability, including: enforcing boating speed limits on upper Lake Britton; fire prevention patrols; stopping ORV use around bald eagle nests; ORV and vehicle access closures; enforcing rules and regulations of various parties as related to the project; minimizing cultural site looting and vandalism; monitoring cultural sites for natural or human caused damage; reducing litter; enforcing compliance of stay limits including no seasonal occupation by vagrants; compliance with fee requirements at recreational sites; enforcing road speed limits; and patrolling PG&E and project related facilities for trespassing and vandalism. The FS comments that our suggestion of using existing law enforcement personnel would not achieve the FS objectives due to their higher priorities and extended response time. The FS comments that a plan is needed, as they now recommended for inclusion under both the recreation management plan and HPMP, to provide adequate personnel to address the resource objectives. The FS also agrees to work with the licensee to find reasonable solutions to provide necessary law enforcement.

Response: We have modified the text of section 3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, to reflect the FS final Section 4(c) conditions.

Comment: The Tribe disagrees with our conclusion to not adopt a separate law enforcement plan and our opinion that it is not PG&E's responsibility to ensure law enforcement in the area. The Tribe further comments that given the compelling resource

objectives, the commonly acknowledged lack of responsiveness by sheriff representatives, and the relatively low cost of entering into an agreement with the local sheriff's office in light of PG&E's profit, the cost to protect vital cultural resources does not seem excessive.

Response: We acknowledge the Tribe's disagreement and have modified section 3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, as appropriate, but maintain that a separate law enforcement plan is unnecessary. Monitoring elements would be included in our recommended recreation management plan and HPMP. Furthermore, the Commission does not have the jurisdiction to require PG&E to fund law enforcement. However, measures to protect cultural resources, including monitoring and vandalism awareness, would be included in the HPMP discussed under section 3.3.7.2, *Cultural Resources*, of the final EIS.

Comment: The FS agrees that PG&E facilities are not meeting current FS Visual Quality Objectives (VQOs). The FS suggests that the VQOs on National Forest System lands within sight distance of PG&E facilities should be changed from "retention" and "partial retention" to "modification" where human activities may visually dominate the landscape. The FS comments that by incorporating these changes into our final EIS, these changes would also be incorporated as non-significant plan amendments to the respective LRMPs. This change, in addition to implementation of the visual management plan, and other project enhancements such as scenic overlooks and facility interpretation, would help make the project compliant with the VQOs in the FS LRMPs.

Response: We agree and have modified the text of section 3.3.6.2, *Land Use and Aesthetic Resources*, to reflect the FS recommendation to modify the LRMP VQOs. We recognize that recent changes in FS policies direct the FS to use the Commission's NEPA document as the FS NEPA document for proposed hydroelectric project licensing that occurs on National Forest System Lands, to the extent possible.⁴

Comment: The FS comments that there are a number of items, such as buoys, signs, and debris, in the Pit 3 and 4 reaches that broke loose from project facilities. The FS states that these items should be removed as soon as possible, rather than waiting until the issuance of a new license for this project. The FS recommends that future project-related debris be addressed in the visual quality plan with a procedure for cleanup in a more timely manner.

⁴ See Federal Register, Vol. 8, No. 107, June 4, 2003, pages 33,582-33,602: 36CFR Part 215; Notice, comment, and appeal procedures for National Forest System Projects and Activities; Final Rule.

Response: We agree that the presence of debris in the project area detracts from the visual quality of the area and that the visual management plan would be an appropriate place to include measures that provide for debris removal. We modified the text of section 5.2, *Comprehensive Development and Recommended Alternative*, in the final EIS to include measures for debris removal in our recommended visual management plan.

Comment: PG&E comments that our recommendations for a fire management and response plan and a visual resource management plan are acceptable.

Response: We appreciate PG&E's cooperation in the implementation of these measures.

Comment: PG&E agrees with our approach of the land and habitat management plan as a mechanism for putting all the various resource management plans into one coordinated plan. However, PG&E is concerned with the number of recommended study and management plans in regards to personnel resources available to the agencies to provide timely consultation, and suggests that the comment periods be clearly defined, such as 30 to 60 days, after which PG&E would address comments received and file final plans with the Commission.

Response: We have modified the text of section 3.3.6.2, *Land Use and Aesthetic Resources*, of the final EIS, to reflect PG&E's agreement with our overarching land and habitat management plan approach. Typically, in its license articles that entail the development of a plan, the Commission specifies that the licensee shall allow the consulted entities at least 30 days to file comments on the draft plans before filing the plans with the Commission for approval. Receiving comments from consulted entities, as well as the responses of the licensee if there is disagreement regarding the plan, is important to the Commission to consider during its deliberations regarding whether to approve the plan as filed, or require modifications to the plan. We recognize that for projects such as this, where we are recommending the development of numerous plans, it can result in time burdens on the staff of consulted entities when concurrent review of multiple plans is necessary. To avoid the undue burdens of concurrent reviews, the Commission attempts to stagger the required filing dates for individual plans. In some instances, this may not be possible, such as when the Commission considers it important that more than one plan be developed expeditiously. However, we plan to consider the burden that plan reviews place on consulted entities when establishing the filing dates for each recommended plan.

Cultural Resources

Comment: Interior comments that the APE should be expanded if new ethnographic data leads to the discovery of additional cultural properties outside the existing APE that are directly or indirectly affected by the project.

Response: Over the term of the license, if new cultural properties are located that are being affected by project operations or project-related activities, then the APE would be expanded to include those properties.

Comment: Interior and the Tribe recommend that the existing repository for curation of archaeological materials and records should be expanded to house additional and new found archaeological materials. The Tribe is concerned that PG&E will not fully implement the HPMP. Interior and the Tribe state that many of the HPMP issues, including monitoring, patrolling, tribal traditional cultural property restoration efforts, and training and employment of tribal members for such activities, have been left to the discretion of PG&E. Interior and the Tribe recommend that the Commission include an article in the new license which stipulates that these measures be implemented.

Response: Page 323 of the draft EIS noted that PG&E has already funded a curation facility, and the draft HPMP commits PG&E to properly curate any additional archaeological materials recovered on project lands in consultation with the Tribe. We therefore expect this issue to be resolved when the HPMP is finalized and approved by the Commission. We also concluded on page 323 of the draft EIS that such issues as monitoring and patrolling, and funding the training and subsequent employment of tribal members should be resolved through further consultations between PG&E and the Tribe, and handled within the context of the final HPMP, and not as a license condition. The Commission intends to execute a Programmatic Agreement (PA) to guide the resolution of adverse effects. We recommend that the new license contain an article which requires PG&E to implement the measures outlined in the PA and HPMP.

Comment: Interior and the Tribe comment that the final National Register nomination should be finalized to include all new information and data obtained from the additional ethnographic study. The FS recommends that the final District nomination be filed within one year after license issuance.

Response: Page 325 of the draft EIS already recommends that PG&E include the information from the additional ethnographic study as part of the new NRHP Lake Britton Archaeological District nomination. Both the ethnographic study and the District nomination should be incorporated into the final HPMP.

Comment: The Tribe and EPA comment that the draft EIS does not provide a discussion of how PG&E determined the APE, nor does it include diagrams or maps of the APE. The APE should be expanded to include Big Bend Rancheria. The EIS should indicate that the Tribe was consulted by the Commission in delineating the APE. The Tribe contests the APE determination, and opposes the State Historic Preservation Officer's (SHPO's) approval of the APE.

Response: In its license application (page E4-5), PG&E discussed how it determined the APE. Maps of the APE, one of which showed the Big Bend Rancheria, were also included in the license application in Appendix E4-D. Maps provided by the U.S. Department of the Interior, Bureau of Indian Affairs, Northern California Agency show that the Big Bend Rancheria boundaries are outside of the project boundaries. PG&E documented consultations with the Tribe in Appendix E4-C of its license application. In response to a January 31, 2000, letter from PG&E to the Commission, we authorized PG&E to represent the Commission in consultations with the SHPO and the Tribe regarding the preparation of information necessary to comply with Section 106 of the National Historic Preservation Act (NHPA), pursuant to 36 CFR 800.2, including the definition of the APE. Page 305 of the draft EIS stated that the APE was delineated after consultation with the Cultural Resources Subcommittee of the PRCT, of which the Tribe was a part. Page 322 of the draft EIS notes that the Tribe had commented to the Commission on the definition of the APE, again proving consultation on this issue occurred on the record. Page 323 of the draft EIS states our response to the Tribe's comments that the APE be redefined. In accordance with 36 CFR 800.4(a)(1), we determined the APE in consultation with the SHPO. While the Tribe was included in discussions about the APE, its approval is not required by the regulations for implementing Section 106. The final EIS clarifies our consultations with the Tribe regarding the definition of the APE.

Comment: EPA and the Tribe request that the Commission consult with the Tribe on a government-to-government basis, and consider the Tribe's comments on the definition of the APE and its interests regarding cultural resources which may be affected by the project.

Response: See response to previous comment. The final EIS clarifies our consultations with the Tribe. Commission staff met directly with the Pit River Tribal Council on two separate occasions prior to the filing of the final license application to discuss cultural resources issues, including the definition of the APE. Even though these particular meetings with the Pit River Tribal Council do not constitute formal government-to-government relations with the Commission and the Tribe, we believe that the EIS documents that the Tribe's concerns regarding potential project impacts on cultural resources have been considered by the Commission. The Commission's policy on consultations with Indian tribes is more fully presented in the policy statement issued on July 23, 2003 (Order No. 635, Docket No. PL03-4-000, 104 FERC 61,108).

Comment: EPA and the Tribe comment that the final EIS should discuss the project's consistency with Executive Order 13175, Consultation and Coordination with Indian Tribal Governments.

Response: Recently, the Commission issued a new policy statement on tribal consultation that comports more closely with what the Tribe is more accustomed to in government-to-

government consultation with other agencies of the executive branch (see Final Rule and Tribal Policy Statement, issued by the Commission on July 23, 2003). Commission staff is in the process of implementing a new policy on tribal consultation; however, we also have to comply with our own regulations governing off-the-record communication between the Commission and other parties under a contested proceeding. Since the license application for this relicensing has already been filed with the Commission, and since intervenors have contested material aspects of the application, the Commission is restricted from meeting with the Tribe on an individual basis, due to our regulations which prohibit Commission staff from meeting with individual parties involved with a contested proceeding. Commission staff has consulted with the Tribe in a fashion which is consistent with Executive Order 13175, even though we have not conducted formal government-to-government relations with the Tribe.

Comment: EPA and the Tribe comment that the final EIS should discuss the project's consistency with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The Tribe also notes that the draft EIS is silent as to environmental justice concerns and analyses.

Response: Executive Order 12898 requires federal executive agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations which may be affected by agency actions. Environmental justice issues encompass a broad range of issues already covered by the National Environmental Policy Act (NEPA), including impacts on the natural or physical environment and interrelated social, and economic effects. Environmental justice analysis focused NEPA review on whether the environmental effects of a proposed federal action has disproportionately high and adverse effects on minority and low-income populations, including Indian tribes. Although independent agencies such as the Commission are not subject to Executive Order 12898, the Proposed Action is expected to have a positive effect on water quality, fish and wildlife populations, and vegetation in the project vicinity, compared to existing conditions. Therefore, the Proposed Action is reasonably expected to have a beneficial effect on any population which relies on fishery resources for food or other purposes. Commission staff have not identified any disproportionate, adverse effect of the Proposed Action on any minority or low-income population or Indian tribe. Commission staff conclude therefore that the Proposed Action does not have adverse environmental justice effects.

Comment: EPA and the Tribe comment that the final EIS should discuss the project's consistency with Executive Order 13007, Indian Sacred Sites.

Response: The draft EIS addressed Indian sacred sites, consistent with Executive Order 13007 and the American Indian Religious Freedom Act (42 USC 1996, as amended), in the

discussion on traditional cultural properties in section V.C.7, *Cultural Resources*. This section has been up-dated in section 3.3.7 of the final EIS to indicate that in June 2003, the Tribe and PG&E entered into Memorandum of Understanding for the conduct of additional ethnographic studies, including traditional plant use and gathering locations. Page 323 of the draft EIS indicated that we intend to execute a new PA and would require a new HPMP for this project. On February 27, 2004, the Commission sent out a draft PA to the Tribe, SHPO, the FS, and Advisory Council on Historic Preservation (ACHP). We requested that the ACHP and SHPO be signatories to the PA, and the Tribe and the FS be concurring parties. The standard Commission PA used for relicensings uses the 3-party format as stated in the Section 106 regulations, where the signatories are the ACHP, SHPO, and lead federal agency. All other parties are concurring, but they are nonetheless full consulting participants in the PA which is consistent with the Section 106 process.

Comment: The Tribe reasserts its request for mitigation of the loss of salmon, cultural resources, and forced alienation from the land. Suggested mitigation measures include restoration of botanical resources and mussel beds, reduced electric rates to tribal members, and training and employment of tribal members as monitors. The Tribe wants PG&E to provide information on old tribal lands and allotments which it claims were historically appropriated by PG&E.

Response: Some of these issues were addressed on pages 322 to 325 of the draft EIS. The draft HPMP addresses mitigation of impacts on cultural resources, and monitoring. Mitigation of impacts on botanical resources considered significant to the Tribe should be addressed in the new ethnographic study. Project related effects on fisheries and plants and proposed mitigation measures are discussed in the *Aquatic Resources* and *Terrestrial Resources* sections (3.3.2 and 3.3.3) of the final EIS. The Federal Power Act does not mandate the mitigation of all past environmental damage. We use the current project as the environmental baseline for our analyses under the National Environmental Policy Act (NEPA). PG&E claims to own title to all non-federal project lands. Land title is a legal issue and not an environmental issue to be reviewed under the NEPA or Section 106 of the NHPA. PG&E may volunteer to provide the Tribe with whatever historical data it deems appropriate regarding Indian allotments in the project area.

Comment: The FS notes that the draft EIS refers to a "new HPMP." The FS and the Tribe agree that the new HPMP is a draft, in need of revision, and the final EIS should continue to reflect the draft status of that document. The FS and the Tribe comment that the discussion of sites that may be eligible for inclusion on the National Register (including table 44 of the draft EIS) does not reflect agreed upon subcommittee changes following field inspections and discussions which took place after the draft EIS was written.

Response: The final EIS clarifies that we use the term “new draft HPMP” to refer to the document filed by PG&E on October 11, 2002 (as part of its final license application), to distinguish it from the “old” HPMP produced in 1987 for the license issued in 1981 and the first draft HPMP for the new license which was filed in October 2001 as part of PG&E's draft license application. The FS and the Tribe are correct in indicating that this is a work in progress. Although we are aware that more recent field inspections and discussions between PG&E, the Tribe, the FS, and the Cultural Resources Subcommittee have resulted in changes to National Register eligibility evaluations and management recommendations for some sites, PG&E has not yet filed up-dated site-specific data which addresses these changes. The final EIS reflects the data presented in October 2002. It is expected that changes in eligibility and management recommendations since that date would be included in the final HPMP.

Comment: The FS would like formal National Register eligibility determinations made for all prehistoric/aboriginal sites based on attributes or features and sent to the SHPO for concurrence. The SHPO's opinions should be sought regarding the eligibility of all new sites identified after the draft EIS was written. The FS wants the final EIS to stipulate that it would be a signatory to the PA.

Response: Under the new draft HPMP, aboriginal sites of undetermined eligibility would be accorded the same protection and management as those that have been determined eligible. As a result, sites of concern to the Tribe that might be determined ineligible as a result of a formal determination of eligibility process would continue to be managed and protected under the HPMP. In addition, these sites would be included in a new District to be nominated to the National Register. We agree with the FS, that the opinion of the SHPO should be sought for newly identified sites. This should be addressed in the final HPMP. We have requested that the FS be a concurring party to the PA. The final EIS clarifies this.

Developmental Analysis

Comment: The FS comments that its consultant's (Stetson's) analysis indicates that we overestimated hydropower generation losses attributable to the FS preliminary 4(e) conditions by 130,100,000 kWh. The FS comments that because we partially rely on hydropower generation reduction estimates to evaluate the various alternative flow proposals, the generation reduction analysis procedure should be revised to provide a correct estimate of generation reduction attributable to the FS proposed flows. Specifically the FS believes we should do the following: 1) quantify power generation differences between historical regulated case and no-action baseline case; 2) separate power generation reduction attributable to the FS preliminary 4(e) and 10(a) flow recommendations; and 3) document our operational model analysis methods and assumptions in order to allow an independent evaluation of the procedure and reasonable

comparison with the FS independent reservoir operations model analysis. The FS refers to Appendix D-4 of their comments for supporting analysis of their independent power loss estimates and a Lake Britton reservoir operations modeling summary.

Response: Our baseline from which we compare the costs of various alternatives (both generation costs and revenue costs) is the no-action alternative, which we consider to be the project as currently licensed. The lost energy value that we used in our developmental analysis in the draft EIS was the total for the FS's preliminary 4(e) conditions, that pertained to the Pit 3 and 4 bypassed reaches, and the 10(a) recommendation, which pertained to the Pit 5 bypassed reach. Our estimate of the lost energy at all three bypassed reaches combined was 208,100 MWh and the comparable total from Stetson's analysis was 191,790 MWh, a difference of 8 percent. Given the potential differences that could exist between the Stetson model and our model, we consider this to be fairly close correlation. We have since adjusted our analysis of the flows initially recommended by the FS (and presented in the draft EIS) based on public comments regarding the draft EIS, and our estimate of lost energy at all three reaches associated with the preliminary 4(e) and 10(a) recommendations is now 204,430 MWh; a difference of 6.5 percent from the Stetson value. We consider the remarkable similarity of our results with Stetson's results to offer verification of the accuracy of our model.

The model that we used to develop our energy estimates is an Excel spreadsheet model based on hydrologic data from USGS gages at the Pit 4 powerhouse and the Pit 4 bypassed reach. We used the combined daily flows and prorated the data upstream to Pit 3 and downstream to Pit 5, by multiplying by the ratio of the area of the drainage basins. We used Pit 4 data because it is representative of actual available flows in the project reaches, and had only limited inflow from local tributaries, compared to use of data from the USGS gage downstream of the Pit 1 powerhouse (near the Highway 299 bridge), but upstream of Lake Britton. The use of Pit 1 data requires not only proration due to the additional drainage area at Pit 3 dam, but inclusion of tributary flow from Hat Creek and Burney Creek, and the adjustment of outflows due to fluctuations of Lake Britton.

Our model uses a weekly time-step based on daily flow data, as opposed to an hourly or daily time-step or a monthly flow duration approach. The model does not incorporate reservoir regulation operations, but the use of the Pit 4 data does account for some of that variability. The model uses maximum and minimum turbine discharge flows and assumed unit efficiencies based on calibration runs.

In response to the FS request to separate costs associated with their 4(e) flow conditions from their comparable 10(a) flow recommendations, we have estimated the cost of each flow measure (as well as other measures where comparable 4(e) and 10(a) measures were made by the FS) separately in the final EIS cost table, but still present the

total cost for the entire project to facilitate comparison with comparable measures made by other entities.

Comment: CalTrout and TU comment that their analysis, presented as Exhibit A of their comment letter, shows that the cost of increasing minimum instream flow requirements is significantly lower than both PG&E's and the draft EIS analysis and that modest increases in flow requirements do not impose an unreasonable financial cost.

Response: The model analysis submitted by CalTrout and TU shows lower lost energy estimates and associated costs compared to those developed by Commission staff and PG&E because it: 1) does not include a capacity value in the cost of replacement power (whereas our model and PG&E's model does); 2) accounts for timing of the lost generation over the course of a day (whereas our model and PG&E's model does not); and 3) uses a daily time step (whereas our model uses a weekly time step and PG&E's model uses a monthly time step).

CalTrout and TU used only the energy and ancillary services component of the PG&E power rates, excluding the capacity value of \$75 per kilowatt-year (roughly 12.5 mills/kWh). The value that we used in the draft EIS is the same as the PG&E power rate presented in their license application, which we consider to be reasonable. The California energy market is, admittedly, in a state of flux. However, in our final EIS we continue to include a capacity value in the power rate to acknowledge the need for additional capacity in the market place now and in the future.

CalTrout and TU modified some of the parameters used in the PG&E analysis including the time step used. CalTrout used a daily time step versus the monthly time step used by PG&E. Our model uses average daily flow data to analyze a weekly time step. The resultant differences in estimated energy losses from alternative approaches to incorporation of hydrological data into the different models does not necessarily mean that one model is more accurate than another. However, we consider the close agreement of the lost energy estimates derived independently by Stetson and ourselves (see above comment response) to support the validity of our modeling approach.

Comment: The FS disagrees that law enforcement staff would cost \$250,000 annually, as estimated by PG&E in their updated cost submittal dated February 25, 2003. The FS agrees that the start up costs would be higher, but could be undertaken with an annual cost of \$50,000 after the first year or as an annual fund to cover other agencies assistance for project law enforcement.

Response: We also considered PG&E's estimate for providing law enforcement staff to be high. Our estimate in the draft EIS to provide increased law enforcement and

management presence was \$20,000 per year. As the FS notes, the actual cost of any plan that is developed post-licensing is dependent upon the details of the plan implementation measures. The actual costs of implementing this plan may lie somewhere between our estimate and PG&E's estimate.

Comment: The FS comments that plans such as the vegetation management plan and fire management plan call for changes on the ground and our developmental analysis needs to reflect costs of such treatments. Annual costs need to be footnoted that they could increase considerably depending on the planning effort.

Response: We acknowledge that the costs for implementing various plans that we or others recommend may vary based on the details of the plans that are ultimately developed and have included footnotes in our table specifying the costs of individual environmental measures section 4.0, *Developmental Analysis*, in the final EIS, as suggested. Prior to implementation of a plan that is specified in any license that may be issued for this project, the Commission would need to approve the plan.

Comment: The FS comments that due to the nature of anchoring the proposed gate and the size of the opening, the bat-friendly gate would cost closer to \$15,000.

Response: We acknowledge that the FS estimate is likely to be more accurate than our initial estimate based on their experience with similar installations. We therefore have modified our cost for this measure in accordance with the FS estimate.

Comment: The FS comments that the \$23,000 annual cost for road maintenance of the road to the car-top boat launch is excessive, unless we intended annual maintenance to include annual grading and surface replacement every 5 years.

Response: Our cost estimate assumed that the indicated road would be maintained in a manner sufficient to enable public access to the cartop boat launch near the gas pipeline crossing of Lake Britton. This most likely would entail similar maintenance activities to what the FS suggests, but we expect that the final details of the O&M activities would be determined during consultation of the development of the road and facilities management plan.

Comment: The FS comments that the trail improvement costs appear insufficient since some reconstruction and relocation of trails would be needed in addition to parking areas and some restroom construction at trailheads would be needed, all to be considered capital and one time costs.

Response: The estimates in the draft EIS for these trail improvements were based either on PG&E estimates or on staff estimates. We expect that the details of these improvements would be finalized during consultation on the recreation management plan and that the cost for implementation would be dependent on the nature of the plan that is ultimately approved by the Commission. Unless the FS provides more a more specific basis for us to revise our costs, we continue to rely on the estimates that were provided in the draft EIS estimates.

Comment: The FS comments that there is a huge disparity between our one-time cost of \$20,000 and PG&E's estimate of project road rehabilitation costs of \$16,040,000 one time and \$120,000 annually. The FS indicates that their objective is to have PG&E reconstruct existing roads where they do not meet FS standards. Thus, some road improvements would be appropriately included in the relicensing budget, but not all project road rehabilitation costs, since those are part of existing road authorizations and not relicensing.

Response: The \$20,000 one-time cost that we listed for development of a road and facilities management plan under item 100 in table 47 of the draft EIS was intended to reflect plan development only. We estimated the cost of implementation of various elements of the road management plan under items 101, 102, and 103 of the same table. We consider that applicable cost components to item 103, "rehabilitate and maintain existing roads" to be that which would be required beyond what would be needed to bring the roads up to applicable county, state, and FS standards. We consider maintenance and upgrading roads to meet applicable standards to be a necessary cost that PG&E would need to incur regardless of this relicensing proceeding, and therefore those costs should already be appropriately factored into PG&E's existing operation and maintenance costs. We clarified our approach to considering costs for road rehabilitation in our summary of the August 28, 2003, Section 10(j)/FS clarification meeting that was issued on September 22, 2003. In its September 25, 2003, response to our summary, the FS suggests that our estimated initial capital cost for of \$50,000 might be low. The FS estimates that the cost of paving 3 miles of the Pit 4 reach alone would be \$560,000, and could be considered a "relicensing implementation cost." We agree that the costs associated with any plan implementation would be dependent on the nature of the specific plan components, as the FS notes in a previously addressed comment. Until the specific plan components are determined, we do not have a basis to change our estimated costs for this measure.

APPENDIX B

**PIT 3, 4, 5 - FERC PROJECT NO. 233-081 COLLABORATIVE AGREEMENT
ON PROPOSED PROTECTION, MITIGATION, AND ENHANCEMENT
MEASURES**

October 29, 2003

*Via FERC E-FILING and
U.P.S. OVERNIGHT MAIL*

Mr. J. Mark Robinson, Director
Office of Energy Projects
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

**Re: Pit 3, 4, 5 - FERC Project No. 233-081
Collaborative Agreement on Proposed Protection,
Mitigation, and Enhancement Measures**

Dear Mr. Robinson:

This letter is to provide you with an update on the Pit River Collaborative Team's ("PRCT") efforts to craft consensus protection, mitigation and enhancement ("PM&E") measures to address several significant resource issues in the subject relicensing proceeding.

The undersigned PRCT participants are pleased to report that they have reached agreement with regard to the subjects of Reservoir Operations, Minimum Streamflows, Freshet Flow Releases, Out-of-Season Spill Flows, Recreation Streamflow Releases, Ramping Rates and Streamflow Information. Specifically, at the conclusion of the PRCT's October 14 - 16 meeting, Pacific Gas and Electric Company ("Company"), U. S. Fish and Wildlife Service, USDA - Forest Service, National Park Service, California Department of Parks and Recreation, California Department of Fish and Game, Modoc County, South Fork Irrigation District, Trout Unlimited, California Trout, American Whitewater, and Iverson Reservoir indicated that, based on the information available to them and in the interest of reaching a consensus solution that balances all beneficial uses, they concur with the attached measures to address these subject areas.

The agreed upon PM&E measures reflect the progress toward reaching agreement on all outstanding issues, including issues that are not related to Pit River streamflows. Substantial progress is also being made toward reaching agreement on recreation development and management, road improvements and maintenance, Hat Creek Fish Barrier, and resource monitoring. Additional PM&E measures to address these issues are being worked on by smaller working groups within the PRCT and are anticipated to be submitted to the Federal Energy Regulatory Commission ("FERC") before the end of November.

Mr. J. Mark Robinson, Director
Office of Energy Projects
Federal Energy Regulatory Commission
October 29, 2003
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For the resource agencies that have yet to complete their statutory relicensing processes (e.g. the Forest Service, completing final 4(e) conditions and U.S. Fish and Wildlife Service conducting future consultation, if required, beyond its October 16, 2003 final biological opinion), concurrence at this point is necessarily conditional that there be no subsequent significant changes to the project record that would affect the subject measures. Additionally, for all of the concurring parties, concurrence is conditional on the resource agencies with authority to condition the license adopting these same measures without materially altering the fundamental concepts or key requirements in their final conditioning documents.

Notwithstanding these necessary qualifications, the concurring parties request that FERC evaluate the attached consensus measures in its final Environmental Impact Statement for the Pit 3, 4, 5 Project and adopt them in the new project license as appropriate conditions for the protection, mitigation and enhancement of project-affected resources. These measures represent a tremendous effort on behalf of the PRCT to achieve a sustainable balance among the beneficial uses of these resources, and the concurring parties have a strong commitment to these measures.

The attached consensus measures are also significant because the Company's acceptance of these measures is a key component in the now-pending resolution of all of the Company's outstanding water rights complaints against upstream water users on the Pit River, as well as the Company's ability to make a unilateral commitment to upstream water users, also now-pending, not to initiate new claims as a result of conditions of the new project license.

Please note that the State Water Resources Control Board ("SWRCB") has actively participated in the PRCT in order to provide the parties with guidance concerning the consistency of PRCT agreements with the Clean Water Act and the Water Quality Control Plan for the Sacramento and San Joaquin River Basins ("Basin Plan"). Notwithstanding this guidance, SWRCB staff has decided it cannot prejudge and approve PRCT agreements or the Company's request for water quality certification and therefore it does not waive the right to act according to SWRCB's independent procedures. Accordingly, the SWRCB is not a signatory.

This "Collaborative Agreement on Proposed Protection, Mitigation, and Enhancement Measures" may be executed by facsimile and in one or more counterparts, all of which taken together, will constitute a single agreement. If you have any questions concerning this letter or the attached PM&E measures, please contact David Moller at (415) 973-4696.

Mr. J. Mark Robinson, Director
Office of Energy Projects
Federal Energy Regulatory Commission
October 29, 2003
Page 3

PACIFIC GAS AND ELECTRIC COMPANY

By: _____
Its: _____

U. S. FISH AND WILDLIFE SERVICE

By: _____
Its: _____

USDA - FOREST SERVICE

By: _____
Its: _____

NATIONAL PARK SERVICE

By: _____
Its: _____

CALIFORNIA DEPT. OF PARKS & RECREATION

By: _____
Its: _____

CALIFORNIA DEPT. OF FISH & GAME

By: _____
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MODOC COUNTY

By: _____
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SOUTH FORK IRRIGATION DISTRICT

By: _____
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TROUT UNLIMITED

By: _____
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CALIFORNIA TROUT

By: _____
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AMERICAN WHITEWATER

By: _____
Its: _____

IVERSON RESERVOIR

By: _____
Its: _____

Mr. J. Mark Robinson, Director
Office of Energy Projects
Federal Energy Regulatory Commission
October 29, 2003
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Enclosures: Signature Pages of Concurring Parties
 Attachment 1: Protection, Mitigation, and Enhancement Measures
 Attachment 2: Rationale Statements For Protection, Mitigation, and Enhancement
 Measures

cc: Ms. Magalie R. Salas, Secretary - FERC Docket Office
 Mr. Lon Crow, Deputy Director, Division of Hydropower/Environment & Engineering - FERC
 Mr. John Mudre, PCRT Project Coordinator - FERC
 Ms. Ann Miles, FERC Director, Division of Hydropower/Environment & Engineering - FERC
 P-233 Service List (Pit 3, 4, and 5)
 Pit River Collaborative Team List

Mr. J. Mark Robinson, Director
Office of Energy Projects
Federal Energy Regulatory Commission
October 29, 2003
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PACIFIC GAS AND ELECTRIC COMPANY

By: 
Its: LEAD DIRECTOR POWER GEN

U. S. FISH AND WILDLIFE SERVICE

By: _____
Its: _____

By: _____
Its: _____

By: _____
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CALIFORNIA DEPT. OF PARKS & RECREATION

By: _____
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CALIFORNIA DEPT. OF FISH & GAME

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MODOC COUNTY

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SOUTH FORK IRRIGATION DISTRICT

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TROUT UNLIMITED

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IVERSON RESERVOIR

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Mr. J. Mark Robinson, Director
Office of Energy Projects
Federal Energy Regulatory Commission
October 29, 2003
Page 3

PACIFIC GAS AND ELECTRIC COMPANY

By: _____

Its: _____

U. S. FISH AND WILDLIFE SERVICE

By: W. S. [Signature] 10/29/03

Its: Field Supervisor

USDA - FOREST SERVICE

By: _____

Its: _____

NATIONAL PARK SERVICE

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Its: _____

CALIFORNIA DEPT. OF PARKS & RECREATION

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Its: _____

CALIFORNIA DEPT. OF FISH & GAME

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Its: _____

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Federal Energy Regulatory Commission
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PACIFIC GAS AND ELECTRIC COMPANY

By: _____
Its: _____

U. S. FISH AND WILDLIFE SERVICE

By: _____
Its: _____

USDA - FOREST SERVICE

Katherine Jordan
By: _____
Its: *Forest Supervisor, South-Truro, NFTA*
Acting on BEHALF of THE FOREST SERVICE

NATIONAL PARK SERVICE

By: _____
Its: _____

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Its: _____

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Its: CA HYDRO PROGRAM LEAD

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Its: _____

CALIFORNIA DEPT. OF PARKS & RECREATION

By: Michael E. G... ..
Its: PARK SUPERINTENDENT

CALIFORNIA DEPT. OF FISH & GAME

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CALIFORNIA DEPT. OF FISH & GAME

By: Donald Kozlowski
Its: Regional Mgr 10/29/03

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USDA - FOREST SERVICE

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CALIFORNIA DEPT. OF PARKS & RECREATION

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MODOC COUNTY

SOUTH FORK IRRIGATION DISTRICT

By: Mike Dunn
Its: CHAIRMAN OF THE BOARD

By: _____
Its: _____

TROUT UNLIMITED

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Page 3

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SOUTH FORK IRRIGATION DISTRICT

By: Kenneth R. M. Gars
Its: President, S.F.I.D.

TROUT UNLIMITED

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By: CH Bonham
Its: California Council

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CALIFORNIA TROUT

By: Chris Knight
Its: Area Manager

AMERICAN WHITEWATER

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Its: _____

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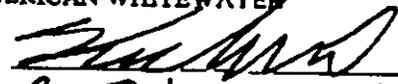
TROUT UNLIMITED

By: _____
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CALIFORNIA TROUT

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AMERICAN WHITEWATER

By: 
Its: *for John Gansoni*

IVERSON RESERVOIR

By: _____
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IVERSON RESERVOIR

By: [Signature]
Its: [Signature]

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Page 1

Attachment 1

Pit 3, 4, 5 - FERC Project No. 233-081

Protection, Mitigation, and Enhancement Measures

Measure: Reservoir Operations

In order to allow spills from Project reservoirs to increase and decrease at a rate resembling the natural unimpaired condition, the Licensee shall, beginning as early as reasonably practicable and within 6 months after license issuance, operate Project dams, reservoirs, and powerhouses according to the operation protocols specified below.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee. The Licensee shall make a good faith effort to notify the FS, CDFG, and SWRCB prior to any temporary modification, and shall notify these agencies with 48 hours that any temporary modification has occurred.

Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

For the purposes of this measure, a spill event is defined as a flow period that lasts at least three consecutive days and has a 3-day mean of more than 300 cfs (and a volume of at least 1,800 acre-feet) above the required minimum streamflow.

Operation Protocols for Pit 3 Dam, Lake Britton, and Pit 3 Powerhouse

1. The year-round minimum water surface elevation of Lake Britton shall be 2,731.5 feet (NGVD) (2,751 feet, PG&E datum).
2. Each year, within 24 hours following the cessation of the first spill event after November 1, but no later than December 1, at least one of the Pit 3 Dam spillway bladder gates shall be kept in the fully deflated position.
3. The Licensee shall take reasonable care to prevent a sudden release of flow when deflating the bladder gates if the bladder gates must be deflated as per item 2 above and Lake Britton surface elevation is at 2,732.5 feet (NGVD) (2,752 feet, PG&E datum) or higher with the bladder gates inflated.

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4. During the period from December 1 through at least April 20 of each year, Lake Britton elevations shall be maintained between 2,731.5 and 2,733.5 feet (NGVD) (2,751 and 2,753 feet, PG&E datum) to the greatest extent practicable by regulating flow through Pit 3 Powerhouse.
5. At least one of the Pit 3 Dam spillway bladder gates shall remain deflated until April 20 or until there is no flow passing the Pit 3 Dam in excess of the required minimum streamflow for the Pit 3 reach, whichever is later.
6. The maximum allowable Lake Britton water surface elevation shall be 2,735.5 feet (NGVD) (2,755 feet, PG&E datum) between April 21 and the Saturday preceding Memorial Day weekend.
7. The maximum normal water surface elevation of Lake Britton shall increase to 2,737.5 feet (NGVD) (2,757 feet, PG&E datum) on the Saturday preceding Memorial Day Weekend or once there is no streamflow passing the Pit 3 Dam in excess of the required minimum streamflow for the Pit 3 reach, whichever is later.
8. If after April 20, and after the streamflow in the Pit 3 reach has receded to the minimum required streamflow, the inflow to Lake Britton increases to a magnitude that requires deflation of a bladder gate to keep the elevation of Lake Britton within the levels specified above, the bladder gate shall remain deflated until streamflow in the Pit 3 reach recedes to the required minimum streamflow.
9. If the Pit 3 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
 - a) Powerhouse flow shall be increased in steps;
 - b) Each step shall not exceed 50 percent of the streamflow passing Pit 3 dam in excess of the required minimum streamflow for the Pit 3 reach, based on the midnight streamflow measurements; and
 - c) There shall be at least a 24-hour interval between steps.

This protocol applies until the Pit 3 Powerhouse reaches full flow or the rate of streamflow passing Pit 3 Dam is less than 200 cfs above the required minimum streamflow for the Pit 3 reach. If the powerhouse is not at full flow at this point, the streamflow passing the Pit 3 dam may be reduced to the required minimum streamflow.

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Operation Protocols for Pit 4 Dam, Pit 4 Reservoir, and Pit 4 Powerhouse

1. The normal operating elevation for Pit 4 Reservoir shall be between 2,415.5 feet and 2,422.5 feet (NGVD) (2,435 feet and 2,442 feet, PG&E datum).
2. During periods of increasing inflow to Pit 4 Reservoir, the following steps shall be taken, to the extent necessary, and in the sequence indicated, until inflow ceases to increase:
 - a) As inflow to Pit 4 Reservoir increases, Pit 4 Powerhouse flows shall be ramped up to match inflow, up to full powerhouse flow.
 - b) If inflow to Pit 4 Reservoir continues to increase, and the reservoir water surface elevation reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), the #1 low-level outlet gate shall be fully opened. As the #1 low-level outlet gate is opened, streamflow shall be transferred smoothly from spill to release. The minimum streamflow release valve shall be closed to prevent plugging with sediment or debris.
 - c) Step b) above shall be repeated for low level outlet gates #2 and #3 until all three low level outlets are opened or inflow ceases to increase.
 - d) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), all three low-level outlets shall be closed and the #2 spillway drum gate shall be lowered, smoothly transferring the release from the low-level outlets to the open spillway.
 - e) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), step b) and c) above shall be repeated until all three low level outlets are opened or inflow ceases to increase.
 - f) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 (NGVD) feet (2,443.7 feet, PG&E datum), step d) shall be repeated for the #1 spillway drum gate.
 - g) If inflow continues to increase, and the reservoir water surface elevation again reaches approximately 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), step b) and c) above shall be repeated until all three low level outlets are opened or inflow ceases to increase.
 - h) Further inflow increases shall be allowed to pass through the open spillway and open low-level outlets.

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3. In order to minimize flow pulses during the recession of spill flow, after inflow has reached a peak and inflow to Pit 4 Reservoir is decreasing, the Licensee shall take the following actions in the sequence listed, beginning with the action corresponding to the actual peak inflow:
 - a) As inflow to the reservoir declines, and the water surface elevation drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
 - b) As inflow to the reservoir continues to decline, and the water surface elevation drops to approximately 2,415.5 feet (NGVD) (2,443.5 feet, PG&E datum), the #2 spillway drum gate shall be raised and all three low-level outlets shall be opened, smoothly transferring a portion of the spill flow to release flow.
 - c) As inflow to the reservoir continues to decline, and the water surface elevation again drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
 - d) As inflow to the reservoir continues to decline, and the water surface drops to approximately 2,415.5 feet (NGVD) (2,435.0 feet, PG&E datum), the #1 spillway drum gate shall be raised and all low-level outlets shall again be opened, smoothly transferring spill flow to release flow.
 - e) As inflow to the reservoir continues to decline, and the water surface elevation drops to approximately 2,422.5 feet (NGVD) (2,442.0 feet, PG&E datum), the #3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
 - f) As the #1 low-level outlet is closed, the minimum streamflow release valve shall be opened to the appropriate required minimum streamflow release setting.
4. If the Pit 4 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
 - a) Powerhouse flow shall be increased in steps:
 - b) Each step shall not exceed 50 percent of the flow passing Pit 4 dam in excess of the required minimum streamflow for the Pit 4 reach, based on the midnight streamflow measurements; and
 - c) There shall be at least a 24-hour interval between steps.

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This protocol applies until the powerhouse reaches full flow or the rate of streamflow passing Pit 4 Dam is less than 200 cfs above the required minimum streamflow for the Pit 4 reach. If the powerhouse is not at full flow at this point, the streamflow passing the Pit 4 dam may be reduced to the required minimum streamflow.

Operation Protocols for Pit 5 Dam, Pit 5 Reservoir, and Pit 5 Powerhouse

1. As inflow to Pit 5 Reservoir increases, Pit 5 Powerhouse flows shall be ramped up to match inflow up to the full powerhouse flow.
2. As inflow to Pit 5 Reservoir exceeds the full flow of Pit 5 Powerhouse, the Pit 5 Dam spillway gates shall be operated to maintain an approximately constant water surface elevation of 2,040.5 feet (NGVD) (2,060 feet PG&E datum) at Pit 5 Reservoir.
3. If the Pit 5 Powerhouse is operating at less than full flow during a spill event, and is able to return to full flow, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse flow:
 - a) Powerhouse flow shall be increased in steps;
 - b) Each step shall not exceed 50 percent of the flow passing Pit 5 dam in excess of required minimum streamflow for the Pit 5 reach, based on the midnight streamflow measurements; and
 - c) There shall be at least a 24-hour interval between steps.

This protocol applies until the powerhouse reaches full flow or the rate of streamflow passing Pit 5 Dam is less than 200 cfs above the required minimum streamflow for the Pit 5 reach and the powerhouse is not at full flow, at which point the streamflow passing the Pit 5 dam may be reduced to the required minimum streamflow.

Measure: Minimum Streamflows

The Licensee shall, beginning as early as reasonably practicable and within 3 months after license issuance, maintain minimum streamflows as specified below. Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

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The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee.

All required minimum streamflows listed below are the average of seven days of the mean daily flow. Individual mean daily flows may be less than the required minimum streamflow. The instantaneous, 15-minute streamflow must be at least 90 percent of the required minimum streamflow. No ramping is required when changing between seasonal required minimum streamflow rates.

Pit 3 Reach Required Minimum Streamflow

For the Pit 3 reach, the spill event that triggers a change from fall to winter required minimum streamflow is defined as a streamflow period in the reach that lasts at least three consecutive days and has a 3-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum streamflow for the Pit 3 reach. Streamflow in the Pit 3 reach shall be measured as the sum of spillway flow calculated from hourly reservoir elevation to account for spill volume and the hourly mean release from a calibrated release valve at the dam or by other means acceptable to the USGS. The Pit 3 Dam spillway bladder gates and low-level outlets shall be operated as described in the Reservoir Operations measure.

A. Summer/Fall Required Minimum Streamflow:

- i. Summer is defined as the period extending from April 21 through August 31.
- ii. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
- iii. The required minimum streamflow during summer shall be 300 cfs.
- iv. The required minimum streamflow during fall shall be 280 cfs.
- v. Following any spill, as defined above, between March 16 and June 15, the required minimum streamflow shall follow the flow regimen described in B. iv.

B. Winter Required Minimum Streamflow:

- i. The winter period begins with the first spill after November 1 and extends through April 20.

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- ii. If no spill occurs between November 1 and April 20, the required minimum streamflow shall be at the summer value throughout the winter.
- iii. If a spill, as defined above, occurs after November 1, the required minimum streamflow following the cessation of the spill shall be 350 cfs. The required minimum streamflow shall remain at this rate through April 20 unless a spill occurs after March 15.
- iv. If a spill, as defined above, occurs between March 16 and June 15, the required minimum streamflow following the cessation of the spill shall be 450 cfs for at least 14 days. The required minimum streamflow shall then be 400 cfs for at least the next 10 days and 350 cfs for at least 10 more days. Thereafter, the required minimum streamflow shall be the required summer minimum streamflow.

Pit 3 Reach - Summary of Required Minimum Streamflows described in detail above:

Season	Start Date	End Date	Required Minimum Streamflow
Summer	April 21	August 31	300 cfs
Fall	September 1	Between November 1 and November 30	280 cfs
Winter (with spill)	Between November 1 and April 20	April 20	350 cfs
Winter (without spill)	December 1	April 20	300 cfs
Winter Spill Cessation	Between March 16 and June 15	June 15	Following cessation of spill: 450 cfs for 14 days then 400 cfs for 10 days then 350 cfs for 10 days then 300 cfs

Pit 4 Reach Required Minimum Streamflow

For the Pit 4 reach, the spill event that triggers a change from fall to winter required minimum streamflow is defined as a streamflow period in the reach that lasts at least three consecutive days and has a 3-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum streamflow for the Pit 4 reach. Streamflow in the Pit 4 reach shall be measured at USGS gage 11362500 (Licensee gage PH30). The Pit 4 Dam spillway drum gates and low-level outlets shall be operated as described in the Reservoir Operations measure.

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C. Summer/Fall Required Minimum Streamflow:

- i. Summer is defined as the period extending from June 16 through August 31.
- ii. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
- iii. The required minimum streamflow during summer shall be 375 cfs.
- iv. The required minimum streamflow during fall shall be 350 cfs.
- v. Following any spill, as defined above, between March 16 and June 15 the required minimum streamflow shall follow the flow regimen described in D. iv.

D. Winter Required Minimum Streamflow:

- i. The winter period begins with the first spill after November 1 and extends through June 15.
- ii. If no spill occurs between November 1 and June 15, the required minimum streamflow shall be at the summer value throughout the winter.
- iii. If a spill, as defined above, occurs after November 1, the required minimum streamflow following the cessation of the spill shall be 450 cfs. The required minimum streamflow shall remain at this value through June 15 unless a spill occurs after March 15.
- iv. If a spill, as defined above, occurs after March 15, the required minimum streamflow after cessation of spill shall decline in three steps, as specified below, once mean daily streamflow at USGS gage 11362500 (Licensee gage PH30) reaches approximately 700 cfs. After completion of the specified flow schedule, the required minimum streamflow shall be the summer required minimum streamflow.
 - a) From March 16 through April 30, the required minimum streamflow is 600 cfs;
 - b) From May 1 through May 31, the required minimum streamflow is 550 cfs; and
 - c) From June 1 through June 15, the required minimum streamflow is 500 cfs.

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Pit 4 Reach - Summary of Required Minimum Streamflows described in detail above:

Season	Start Date	End Date	Required Minimum Streamflow
Summer	June 16	August 31	375 cfs
Fall	September 1	Between November 1 and November 30	350 cfs
Winter (with spill)	Between November 1 and June 15	June 15	450 cfs
Winter (without spill)	December 1	June 15	375 cfs
Winter Spill Cessation	March 16	April 30	600 cfs
	May 1	May 31	550 cfs
	June 1	June 15	500 cfs

Pit 5 Reach Required Minimum Streamflow

For the Pit 5 reach, the spill event that triggers a change from fall to winter required minimum streamflow is defined as a streamflow period in the reach that lasts at least three consecutive days and has a 3-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum streamflow for the Pit 5 reach. Streamflow in the Pit 5 reach shall be measured at USGS gage 11363000 (Licensee gage PH27). The Pit 5 dam spillway gates shall be operated as described in the Reservoir Operations measure.

E. Summer/Fall Required Minimum Streamflow:

- i. Summer is defined as the period extending from April 21 through August 31.
- ii. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or through November 30, whichever is earlier.
- iii. The required minimum streamflow during summer shall be 400 cfs.
- iv. The required minimum streamflow during fall shall be 350 cfs.
- v. Following any spill, as defined above, between March 16 and June 15, the required minimum streamflow shall follow the flow regimen described in F. iv.

F. Winter Required Minimum Streamflow:

- i. The winter period begins with the first spill after November 1 and extends through April 20.

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- ii. If no spill occurs between November 1 and April 20, the required minimum streamflow shall be at the summer value throughout the winter.
- iii. If a spill, as defined above, occurs after November 1, the required minimum streamflow following the cessation of the spill shall be 450 cfs. The required minimum streamflow shall remain at this level until April 20 unless a spill occurs after March 15.
- iv. If a spill, as defined above, occurs between March 16 and June 15, the required minimum streamflow following the cessation of the spill shall be 550 cfs for at least 14 days. The required minimum streamflow shall be 500 cfs for at least the next 10 days and 450 cfs for at least 10 more days. The required minimum streamflow shall then be the required summer minimum streamflow.

Pit 5 Reach – Summary of Required Minimum Streamflows described in detail above:

Season	Start Date	End Date	Required Minimum Streamflow
Summer	April 21	August 31	400 cfs
Fall	September 1	Between November 1 and November 30	350 cfs
Winter (with spill)	Between November 1 and April 20	April 20	450 cfs
Winter (without spill)	December 1	April 20	400 cfs
Winter Spill Cessation	Between March 16 and June 15	June 15	Following cessation of spill: 550 cfs for 14 days then 500 cfs for 10 days then 450 cfs for 10 days then 400 cfs

Measure: Freshet Flow Releases

In order to assure that a streamflow sufficient to maintain channel conditions and the riparian community will occur at a frequency of at least every second year, the Licensee shall make freshet flow releases into each of the three Project-affected reaches of the Pit River as described below. Project reaches shall be considered separately and independently when determining if a freshet flow is required. The Licensee shall not initiate a freshet flow if mean daily water temperature at Licensee gage PH30 exceeds 11° C for two consecutive days in the two-week period prior to the scheduled initiation of

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the freshet flow. The temperature criteria for not initiating a freshet flow may be modified after consultation with the FS, CDFG, FWS, and SWRCB, and with approval of the FS and SWRCB, based on available information and monitoring of foothill yellow-legged frog breeding and egg deposition in the Pit River. The Licensee shall install water temperature monitors (i.e., telemetered, real time, year-round) at stream gage PH 30 in the Pit 4 reach and at stream gage PH 27 in the Pit 5 reach.

The following planning events and actions shall be implemented each year:

1. If, as of January 1 of each year, there has been no spill, as defined in item 4 below, in the previous 15 months into a given Project-affected river reach, the Licensee shall notify the FS, CDFG, FWS, SWRCB and interested parties that there is a potential need for a freshet flow release for that reach during the upcoming March.
2. If no spill has occurred as per item 1, the Licensee shall post, following the provisions in the Recreation Streamflow Information measure, a notice prior to February 15 of a planned freshet flow for that reach beginning between March 1 and March 7, scheduled so that the peak flow occurs over a weekend to facilitate whitewater boating opportunities.
3. A freshet flow shall have the following characteristics: the duration of the event, including the flow increase, decrease and the peak, must be at least 21 days in length; the instantaneous peak flow magnitude must be at least 1,500 cfs; and there must be a 2-day average flow of at least 1,500 cfs. After the peak, streamflow shall decrease in five steps of approximately equal magnitude and duration over the remaining days of the freshet period, ending at the winter required minimum streamflow for the reach. Ramping between each flow step shall be 0.5 foot/hour or less, as defined by the Ramping Rates measure.
4. For the purposes of this measure, spill is defined as streamflow event at a Project dam during the 17 months prior to the March 1 freshet flow implementation date that meets all of the following characteristics: occurs between December 1 and May 31; has a cumulative volume of at least 25,000 ac-ft; has a duration of at least 21 days; and has at least two average daily flows exceeding 1,500 cfs. Spill may be made up of natural and released flows.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee. The Licensee shall make a good faith effort to notify the FS, CDFG, FWS and SWRCB prior to any modification, and shall notify these agencies within 48 hours that any temporary modification has occurred.

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Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

Measure: Out-of-Season Spill Flows

The Licensee shall operate the Project in a manner that does not cause discretionary, out-of-season spill flows in excess of twice the required minimum streamflow at Pit 3 Dam, Pit 4 Dam, and Pit 5 Dam. An out-of-season spill is defined as a spill that occurs during the normally non-spill summer and fall period. The Licensee shall take all reasonable controllable actions necessary to control out-of-season spill flows, which shall include, as a first priority, utilization of Project storage.

In the event an out-of-season spill occurs, the Licensee shall take reasonable controllable actions to minimize the magnitude, duration, and potential adverse ecological impacts of such spill. Such actions shall include, to the extent practicable, ramping the spill flow up and down as described in the Ramping Rates measure. In the event a discretionary out-of-season spill occurs, the Licensee shall develop and implement, through consultation with FS, CDFG, SWRCB, and FWS, reasonable actions to mitigate for identified adverse ecological impacts of such spill. The Licensee shall prepare, maintain, and on an annual basis provide to FERC, FS, CDFG, SWRCB, and FWS a record of any out-of-season spills, identifying the affected reach, hourly discharge, the maximum flow magnitude, dates and duration, cause of spill, and mitigation provided.

Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

Out-of-season spills resulting from equipment malfunction, emergency and law enforcement activity, and critical electric system emergencies beyond the control of the Licensee are not considered discretionary. This measure does not apply to any required recreation streamflow releases.

Measure: Recreation Streamflow Releases

The Licensee shall, within 6 months after license issuance and in consultation with SWRCB, CDFG, FWS, NPS, CDPR, Pit River Tribe, AW, and other parties who request involvement, develop a plan for providing annual recreation streamflow releases in the Pit 5 reach suitable for whitewater boating. The Licensee shall submit a draft plan for

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30-day review and comment by the entities consulted, and shall within 30 days thereafter submit a final plan, addressing comments received on the draft plan, to the SWRCB for approval. Within 10 days following approval by the SWRCB, the Licensee shall file the plan with FERC for final approval. Upon approval by FERC, the Licensee shall implement the plan.

The plan shall consist of the following key elements: Baseline Data; Recreation Streamflow Schedule; Monitoring; and Adaptive Management, with each element providing the information specified below.

Baseline Data: This element shall identify essential baseline data necessary for effective evaluation of possible ecological effects of the recreation streamflow releases. The element shall identify existing data and data to be developed, shall include a study plan and schedule for obtaining such data, and shall describe how data will be used. Additionally, the element shall specify the timing relationship between data acquisition, initiation of recreation streamflow releases, and potential adjustment of recreation streamflow releases in response to data gathered. The period for acquisition of baseline data shall not exceed 5 years and the total cost shall not exceed \$250,000. The study plan and schedule shall be adjusted, as appropriate, to not exceed these limits.

Recreation Streamflow Schedule: This element shall specify details of the recreation streamflow release. The initial recreation streamflow release schedule shall be at total of four recreation release flow days per year consisting of two consecutive weekend days in August with flows of 1,500 cfs from 10 AM to 4 PM at Pit 5 Dam and two consecutive weekend days in September with flows of 1,200 cfs from 10 AM to 4 PM at Pit 5 Dam. All flow magnitudes shall be 1,200 cfs in years that Pit 3 Dam does not spill, as defined in the Required Minimum Streamflow measure. The initial recreation streamflow release schedule shall be maintained for a minimum of 3 consecutive years. Thereafter, it may be modified as described in the Adaptive Management element. The Licensee shall make a good faith effort to provide the specified recreation streamflow magnitudes within the accuracy of the existing flow release facilities at Pit 5 Dam.

Monitoring: The Monitoring element shall consist of two subsections: environmental monitoring and boater-use monitoring. (1) The environmental monitoring subsection shall describe the environmental monitoring to be performed to assess and evaluate potential environmental effects of the recreation streamflow releases. At a minimum, the environmental monitoring program shall include monitoring of impacts to aquatic biota, other river users, other recreation users, special status species, and cultural sites and uses. The environmental monitoring program shall commence upon implementation of the recreation streamflow releases. The monitoring period shall not exceed 3 years and the total cost shall not exceed \$150,000. The monitoring shall be adjusted, as appropriate, to not exceed these limits. (2) The boater-use monitoring subsection shall describe the monitoring to be performed to assess the adequacy of the number of recreation streamflow release days in a year. The boater-use monitoring program shall provide for monitoring actual boater use of recreation streamflow releases. For the first three years

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of recreation streamflow releases, the Licensee shall, on each recreation streamflow release day, count observed boater use in "boater days." One boater day is defined as boating use of the Pit 5 reach by one person for any part of a given day. After the first 3 years of recreation streamflow releases, boater-use monitoring shall be performed in any year that the number of recreation streamflow release days is increased or decreased and at least once every three years over the term of the license. Boater-use monitoring may be discontinued by mutual agreement between the Licensee and SWRCB after consultation with AW, FWS and other interested members of the public, and with the concurrence of FERC.

Adaptive Management: This element shall describe the adaptive management program for potential adjustment of the recreation streamflow releases in response to the results of the environmental and boater-use monitoring programs specified in the Monitoring element. Adjustment of the magnitude of recreation streamflow releases and schedule may occur in response to the results of the environmental monitoring program. Such adjustments shall be objective and based on sound scientific study. The Licensee shall consult with SWRCB, CDFG, FWS, NPS, CDPR, Pit River Tribe, AW, and other parties who request involvement regarding any such adjustments, and shall obtain approval by SWRCB and notify FERC before implementing such adjustments. Adjustment of the recreation streamflow release schedule in response to the results of the boater-use monitoring shall consist of adding or subtracting recreation streamflow release days based on actual use. One weekend day of recreation streamflow releases shall be added to the recreation streamflow release schedule for the next year if actual use exceeds 80 boater days for each recreation streamflow release day in a given month. One weekend day of recreation streamflow releases shall be subtracted from the recreation streamflow release schedule for the next year if actual boater use is less than 25 boater days for each recreation streamflow release day in a given month. The number of recreation streamflow release days shall be adjusted for the same month in which the adjustment triggers were met. Based on boater use monitoring, the number of recreation streamflow release days shall not be reduced to less than one weekend day in August and two consecutive weekend days in September, and shall not be increased to more than four weekend days in August and four weekend days in September. If the maximum number of recreation streamflow release days is being provided, and actual use exceeds 80 boater days on all days, one additional weekend day of recreation streamflow release with flows of 1,200 cfs from 10 AM to 4 PM at Pit 5 Dam shall be provided in October of the next year. The October recreation streamflow release day is subject to the same future adjustment as the August and September recreation streamflow release days, with a maximum number of two consecutive weekend days, and a minimum number of no days. Recreation streamflow release days shall not be added during the 3-year environmental monitoring period.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency and law enforcement activity, and critical electric system emergencies beyond the control of the Licensee. Additionally, the measure is subject to the safe operability of the Project facilities and equipment necessary to provide

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such recreation streamflow releases and the Licensee's ability to utilize the recreation streamflow release for power generation at the Pit 3, Pit 4, Pit 6 and Pit 7 powerhouses. The Licensee shall make a good faith effort to maintain the operability of such facilities and equipment and shall not schedule discretionary outages of such facilities and equipment in conflict with providing the recreation streamflow releases. The Licensee shall make a good faith effort to make scheduled recreation streamflow releases on the days when such releases are scheduled to occur. In the event a scheduled recreation streamflow release is not provided, the Licensee shall make a good faith effort to provide a comparable recreation streamflow release as soon as practicable thereafter with sufficient notice to the boating community. The Licensee shall make a good faith effort to notify the FS and SWRCB prior to the cancellation of any planned recreation streamflow releases. The Licensee shall notify these agencies within 48 hours of the cancellation of any planned recreation streamflow release.

Measure: Ramping Rates

To prevent adverse effects of rapid changes in regulated streamflow that are inconsistent with the natural rate of change in streamflow, the Licensee shall follow the ramping rates specified below when making streamflow releases from Pit 3, Pit 4, and Pit 5 dams unless a different ramping rate is specified in another measure. These ramping rates shall be implemented as soon as practicable after license issuance, dependent on facility capability.

A ramping rate is defined as the rate of change in stream stage height, up or down, over a time period, such as 0.5 foot/hour. The Licensee shall be deemed in compliance with the specified up and down ramping rate if at least 75 percent of the actual incremental changes in flow are less than or equal to the specified ramping rate, and all of the actual incremental changes in flow are less than 150 percent of the specified ramping rate.

Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency and law enforcement activity, and critical electric system emergencies beyond the control of the Licensee. The Licensee shall make a good faith effort to notify the FS, CDFG, and SWRCB prior to any temporary modification, and shall notify these agencies within 48 hours that any temporary modification has occurred.

Ramping Rate for Freshet Flow Releases: A freshet flow may be released in March of some years, and will consist of a 21-day flow event that is described in detail in the

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Freshet Flow Release measure. The ramping rate to reach the daily target values for freshet flows shall be 0.5 foot/hour or less, up and down.

Ramping Rate after Spills Influenced by Powerhouse Outages: As described in the Reservoir Operations measure, some spills may include, or be composed entirely of, flow that would otherwise be going through a powerhouse but is instead released as spill due to a powerhouse outage. The Reservoir Operations measure specifies that when returning the powerhouse to full load, the 24-hour increase of powerhouse flow shall not exceed 50 percent of the flow passing the associated dam in excess of the required minimum streamflow for the affected reach, based on the midnight streamflow measurements. The ramping rate shall be 0.5 foot/hour or less. The final step to the required minimum streamflow is allowed when the difference between the flow passing the dam is less than 200 cfs above the required minimum streamflow for the affected reach. If the powerhouse is not at full load at this point, the streamflow passing the dam may be reduced to the minimum required streamflow.

Ramping Rate Before and After Out-of-Season Spills: If the Licensee anticipates that an out-of-season spill is imminent because the storage capacity of the affected reservoir will be exceeded, the Licensee shall make a good faith effort to initiate streamflow releases that ramp up to the expected spill flow in at least three steps. An out-of-season spill is defined as a spill that occurs at Pit 3 Dam, Pit 4 Dam, or Pit 5 Dam during the normally non-spill summer and fall period. The out-of-season spill shall be ramped down at a rate of 0.5 foot/hour or less.

Ramping Rate for Recreation Streamflow Releases: The ramping rate up and down for recreation streamflow releases shall be 0.5 foot/hour or less. Both up and down ramping steps shall be implemented every other hour until the specified recreation streamflow release (ramp up) or the required minimum streamflow (ramp down) is reached.

Ramping Rate for Changes in Required Minimum Streamflow: Because the magnitude of changes in required minimum streamflow is less than the change in streamflow associated with a 0.5-foot change in stage height, no ramping is required for these changes in streamflow.

Measure: Streamflow Information

The Licensee shall, beginning as soon as reasonably practicable and no later than one year after license issuance, each year make available to the public the recreation streamflow information listed below. Unless otherwise noted, the streamflow information shall be available to the public via toll-free phone and Internet, which may be accomplished through a third party. The streamflow information protocols may be modified upon mutual agreement of the Licensee, FS and other responsive parties who request involvement, and acceptance by FERC. The following information shall be made available:

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1. The hourly average streamflow in the Pit River below each of the Pit 3, Pit 4 and Pit 5 dams for the current day and the past seven days. The streamflow information may be measured, calculated or a combination of the two. The streamflow information shall be posted within four hours of collection. Streamflows shall be rounded up to the nearest 50 cfs, and all plots and tables showing these data shall be labeled: "These provisional data have not been reviewed or edited, and may be subject to significant change."
2. By January 5, the proposed dates and magnitude for any freshet flow, if applicable, planned to be provided by the Licensee, with updates by February 15 and within two days of any changes in plans.
3. By July 1, the proposed dates for any recreation streamflow releases, with updates at least two weeks and one week in advance of each proposed date.

In addition, the Licensee shall:

1. As soon as reasonably practicable and no later than two years after license issuance, install and maintain one simple staff gage/depth indicator at the following locations: Licensee gage PH30 below Pit 4 Dam, Licensee gage PH27 at Big Bend Bridge, and provided a suitable location is identified in consultation with FS, FWS, and American Whitewater, below Pit 3 Dam. The Licensee shall make a good faith effort to locate the staff gages/depth indicators near public access locations so they are easily accessible for public reference. The Licensee shall provide a means at each staff gage/depth indicator to reasonably correlate staff gage/depth indicator readings to cfs.
2. Notify the community of Big Bend and the Big Bend Rancheria in advance of planned freshet flow releases and recreation streamflow releases by posting bulletins on public bulletin boards located in those communities.

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Attachment 2

Pit 3, 4, 5 – FERC Project No. 233-081

Rationale Statements for Protection, Mitigation, and Enhancement Measures

The following Rationale statements are intended to provide FERC staff and others with an overview of the rationale used by the Pit River Collaborative Team (PRCT) in developing the seven PM&E measures that accompany the “Collaborative Agreement on Proposed Protection, Mitigation, and Enhancement Measures.” These Rationale statements were developed with input from the concurring parties, but are not intended as a definitive rationale statement by any individual concurring party. The Rationale statements are supplemental to the Project record, and rely on the more detailed data contained in that record. It is not the intent of the concurring parties that these Rationale statements become part of the proposed PM&E measures; the Rationale statements are intended only to assist FERC staff and others in understanding the rationale behind these measures.

The Rationale statements are identified using the name of the applicable PM&E measure.

Rationale Statement for Reservoir Operations

The purpose of the Reservoir Operations measure is to assure that winter and spring spill flows increase and recede naturally and avoid a sudden increase in streamflow due to the initiation of spills or a sudden reduction of spill flows due to increasing flow through a generation unit or exercising reservoir storage capacity. A secondary benefit of the measure is a slight increase in the frequency and duration in spill events at Lake Britton. While study results indicate that stranding of aquatic biota is not a major concern in the Pit River, there is concern about the effects of displacement of organisms due to sudden changes in streamflow. It is also believed that a more naturally receding streamflow will benefit the riparian community by facilitating seed dispersal and germination.

Lake Britton is the largest of the Project’s three reservoirs. Although it has limited ability to control storm flows in excess of the diversion capacity, there is a short period in which Lake Britton can capture the increasing inflow by utilizing the upper approximately six feet of the reservoir capacity. By reducing the range of allowable winter operating elevations at Lake Britton and maintaining relatively constant generation flows through Pit 3 Powerhouse, spills at Pit 3 Dam will occur more frequently and increase and recede at a more natural rate.

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The measure also establishes operating criteria for Pit 4 and Pit 5 Powerhouses, reservoirs, and dams. As with Pit 3, these criteria provide for a more natural increase and decrease of spill flows into the reaches below the dams. The Pit 4 and Pit 5 dams are designed differently than Pit 3, and retain much smaller impoundments. The Pit 4 Dam spillway contains two drum gates used to maintain reservoir elevations and control flow through the spillway. The dam also contains three low-level outlets each capable of passing a flow of 1,200 cfs. In order to assure that spill flows will increase and decrease at a more natural rate, it will be necessary to coordinate the use of the low-level outlets and the spillway drum gates with reservoir elevations. The measure describes the steps for operating the various gates and outlets to produce a smooth increase and decrease of streamflow. Pit 5 Dam spillway consists of four spillway bays each containing a large slide gate approximately 60 feet in length. These gates are raised to allow spill flows to pass below the gates. They are automatically operated based on reservoir elevation. The measure provides that with the powerhouse at a constant flow, excess inflow to the Pit 5 Reservoir will be allowed to pass below the gates and the reservoir will remain at a constant level.

The measure also addresses the occasions when it is necessary to increase flow to a powerhouse after one or more units is off-line during spill conditions and then is brought back on line. The specified powerhouse flow criteria will prevent the sudden termination of spill flows due to increasing the flow through a powerhouse.

Rationale Statement for Minimum Streamflows

The Pit River has one of the most diverse aquatic species assemblages of any river in California, and has many endemic species. Extensive instream flow modeling, both 1-dimensional and 2-dimensional Physical Habitat Simulation Models (PHABSIM) for multiple fish species and foothill yellow-legged frog (FYLF), was conducted for the Project. Information from the instream flow models was used by the PRCT, along with professional judgment to balance the needs of many aquatic species (fish, FYLF, and mollusks), bald eagles, angler wading, and power generation.

In general, the goals of the Minimum Streamflows measure are to achieve the greatest increase in the amount of available aquatic habitat for fish, while balancing the needs for eagle foraging, anglers, and power generation, and re-establishing a hydrograph with a shape that more closely resembles the unimpaired condition. Required minimum streamflow magnitudes were established as a balance between these considerations. Also, the required minimum streamflows are adjusted seasonally so that higher minimum streamflows are provided during the wetter winter seasons and reduced streamflows are provided during the summer dry period, while allowing for greater power generation during the period of highest power demand (i.e. summer period). The required minimum streamflows increase in magnitude in each consecutive downstream reach to mimic the increase in streamflows that would occur in the unimpaired condition. Additional streamflow will occur naturally within each reach based on inflow from tributaries and

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springs supplying ground water to the river. These additions were considered and are viewed as positive natural variations.

In the Pit 4 reach, the required minimum streamflows during the spring season are relatively higher and extend for a longer period of time than in the Pit 3 and Pit 5 reaches. The reason for this difference is the presence of a breeding population of FYLF in the Pit 4 reach. These frogs generally deposit their eggs on the river substrate during the spring season as the flow in the river recedes (although the cues for initiation of breeding and egg deposition may include water temperature, air temperature, daylight length, and/or hydrology). Following deposition, the eggs are vulnerable to increases and directional changes in streamflow that can cause the egg masses to shear from the substrate. The higher spring season flows for longer periods will minimize the effects of uncontrollable streamflow increases by reducing changes in velocity and direction.

Although the Project does not have sufficient storage to substantially control flow in excess of the Project's diversion capacities, it is capable of controlling the bottom end of the receding hydrograph and small runoff events. The bottom end of the receding hydrograph is believed to be important for the maintenance of the stream channel for fish and aquatic organisms and the riparian community for wildlife and terrestrial resources. Therefore, required minimum streamflows during the winter spill cessation are adjusted to provide a more gradual ramping down of the receding hydrograph to avoid abrupt termination of spill flows. In the Pit 3 and Pit 5 reaches this is accomplished by providing higher required minimum streamflows for a specified number of days as the winter spill recedes. If spill is reinitiated, these ramp-down requirements will be applied again. In the Pit 4 reach, the ramp-down is achieved by providing higher required minimum streamflows between specific calendar dates. The difference in approaches is based on the presence of the breeding population of foothill yellow-legged frogs in the Pit 4 reach, and the need to avoid changes in streamflow direction that could be caused by the reinitiating of spills. These changes in flow direction occur when streamflows of less than 400 cfs are increased to flows greater than 400 cfs, and can shear FYLF egg clusters from the river substrate.

This measure also recognizes that even under unimpaired conditions, there are certain years in which the streamflow in the Pit River would remain relatively constant. Therefore, in non-spill years the required minimum streamflows remain relatively constant throughout the year and a winter minimum streamflow is not required.

The required minimum streamflows, when considered with other flow-related resource measures agreed to by the PRCT, will create a more natural shaped hydrograph than currently exists. It is believed that this measure will protect, mitigate and enhance the Pit River fish and aquatic organisms, wildlife, and associated ecosystems, while sustaining other beneficial uses of these resources.

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Rationale Statement for Freshet Flow Releases

The intent of the Freshet Flow Releases measure is to assure that flows of sufficient magnitude to cleanse the stream channel and recharge the riparian ground water will occur at least every other year. These flows are termed "freshet flows" since they are significantly less than flood flows and are of a relatively short duration.

It is believed that successive low flow years in which no spill occurs may result in accumulation of fine sediments and organic materials in the river substrate, increased encroachment of vegetation into the river channel, and reduced germination and recruitment of riparian vegetation. Freshet flows are intended to perform this function by providing a streamflow equivalent to a modest spill at a time of year when spills typically occur. The timing of these freshet flows is such that they will avoid interrupting FYLF breeding and egg deposition, and recharge the riparian water table prior to seed germination and the plant-growing season.

The total duration of a freshet flow, including ramp-up, peak, and ramp-down, is intended to simulate a natural spill event and receding hydrograph. This amount of streamflow will move the substrate sufficiently to cleanse it of accumulated fine sediments and organic debris, and move, sort, and redistribute spawning gravels for fish and aquatic organisms. The freshet flows also assure that the riparian ground water will be recharged, minimizing stress on the riparian community caused by successive dry years. It is also believed that freshet flows will assist in reducing vegetation encroachment into the stream channel, providing access to diverse habitat on the channel floor for aquatic species, preventing, reducing, or removing bullfrog populations, and providing recreational boating opportunities.

The measure allows the Licensee to take advantage of naturally occurring spill events that may not be of sufficient magnitude or duration to qualify as a freshet flow. The requirement for a freshet flow may be met by supplementing these natural events with additional streamflow by reducing generation. The measure also allows spills resulting from maintenance outages to qualify as freshet flows if they are of sufficient magnitude and duration.

Rationale Statement for Out-of-Season Spill Flows

The intent of the Out-Of-Season Spill Flows measure is to avoid and minimize the effects of discretionary spill flows during the time of year when streamflow is otherwise at a low, constant level. Changes in electric power demand over the past few years have led to increased occurrence of discretionary out-of-season spills into Project-affected reaches of the Pit River. Under certain power demand conditions, water is spilled to bypass an off-line generating unit in order to transport water to downstream generation facilities. The result has been occasional large, short duration increases in streamflow followed by

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rapid declines during the summer season when the streamflow would normally be at low, constant levels.

These spikes in streamflow have the potential to interrupt reproductive cycles of aquatic organisms or cause displacement of young-of-the-year, resulting in long-term population affects. Additionally, aquatic vegetation can be dislodged and scoured from the streambed and macroinvertebrates can be dislodged, reducing this source of food for fish. Other detrimental effects on the aquatic ecosystem are not so easily detected, but can be significant in terms of species survival. The ecosystem would likely recover quickly from occasional, infrequent occurrence of out-of-season spills, but repeated occurrences could have significant adverse affects.

This measure seeks to avoid utilizing the river channel as a means of bypassing an out-of-service generation unit in order to keep downstream units on-line. Additionally, the measure requires the utilization of all available upstream Project water storage capacity in the event of a powerhouse outage. Once all storage is utilized, spills cannot be avoided if the off-line generating unit remains off-line.

Rationale Statement for Recreation Streamflow Releases

Whitewater boating is a recreation activity that has been growing in popularity over the past few decades. Operation of the Project has eliminated streamflows in the boatable range during the warm summer months. The Recreation Streamflow Releases measure is intended to provide whitewater boating opportunities in the Pit 5 Reach during warm months preferred by boaters. It is limited to the Pit 5 Reach so that anglers can utilize the Pit 3 reach throughout the summer months at streamflows less than boatable flows, and to avoid flow fluctuations between base flows and recreation streamflow releases which might adversely impact the population of foothill yellow-legged frogs located in the Pit 4 Reach.

There are concerns regarding the potential impact on fish and other aquatic organisms from periodic recreation streamflow releases during the time of year when streamflow rates are stable at lower levels. The affects of recreation streamflow releases in the Pit 5 reach ecosystem are unknown at this time. To assess this uncertainty, the measure provides for studying the effects of the recreation streamflow releases on the aquatic ecosystem after the new minimum streamflow requirements are implemented.

This measure calls for the Licensee to develop a recreation streamflow release plan, in consultation with others, consisting of four elements. Each element is intended to address the combined interests of the participants in the PRCT. These elements are as follows:

Baseline Data: This element is intended to identify the conditions that exist in the Pit 5 reach following the implementation of new required minimum streamflows. It is

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anticipated that the aquatic ecosystem will respond to these new flow levels over a period of time. The establishment of a baseline is necessary in order to ascertain if recreation streamflow releases during the late summer and early fall seasons has an affect on the aquatic biota. The length of time required to establish the baseline conditions was a matter of considerable discussion within the PRCT, as was the timing relationship between acquisition of baseline data and implementation of the recreation streamflow releases. As a result, the measure identifies and leaves these details to be resolved during development of the recreation streamflow release plan. However, the measure does establish limits on the duration and cost of acquiring baseline data. The maximum time period of five years was established to allow adequate time for gathering baseline information, yet provide certainty that recreation streamflow releases will be initiated within a reasonable period of time. The cost limitation was established to limit baseline studies to essential data and to establish certainty regarding cost impacts to the Licensee.

Recreation Streamflow Schedule: The schedule for recreation streamflow releases took into consideration boaters' desire for warm month boating opportunities and the timing of reproductive cycles of aquatic organisms. Given the latter of these considerations it is believed that the late summer/early fall period would be the least damaging to aquatic organisms. The initial number of recreation streamflow release days was based on the providing a reasonable level of boating opportunity while limiting the considerable impact of providing such flows on power generation. The power generation impacts consider not only the bypass of flows past Pit 5 Powerhouse, but also the operational complexity of moving the recreation streamflow release through the system and the shifting of generation from peak periods to off peak periods at Pit 3, 4, 6 and 7 powerhouses. The initial 3-year period was selected to allow assessment of the level of boater use of the recreation streamflow releases and to allow sufficient time to conduct studies to determine environmental impacts. The flow magnitudes were selected based on boater use studies to assure a good boating experience while considering generation impacts.

Monitoring: Monitoring is divided into ecological and boater-use monitoring. In this way the affects of the recreation streamflows on each of these beneficial uses can be determined. The measure establishes limits on the scope and cost of the monitoring to assure the monitoring is adequate, but limited to essential information.

Adaptive Management: This element provides for adjusting scheduling, magnitude and frequency of recreation streamflow releases based on the information gathered through the baseline and monitoring studies.

Rationale Statement for Ramping Rates

Sudden increases or decreases in streamflows can be disruptive to an aquatic ecosystem. These disruptions can vary with the season of occurrence and can, for example, result in flushing or relocating individual organisms to less desirable habitat or locations, scouring of eggs or nests, and stranding, trapping, loss to predation, and desiccation as water levels

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recede. Under some circumstances the Project has the ability to control the rate of change in streamflow and avoid these impacts. The goal of the Ramping Rates measure is to minimize impacts to aquatic ecosystems that could be caused by rapid changes in regulated streamflow magnitude.

In general, the ramping rate is applied to times when there are regulated changes in streamflow. The measure generally specifies a ramping rate of 0.5 foot/hour, similar to the natural rate of streamflow recession. One exception is the specified ramping rate for returning an off-line generating unit to service during spill conditions. When returning a unit to service during a spill, the Project has the ability to abruptly change the rate of streamflow resulting from the spill. For this circumstance, the measure provides for a generating unit to return to service over time, without creating a sudden change in streamflow rate. The specified ramping rate for this circumstance is 50 percent of the streamflow in excess of the required minimum streamflow, during a 24-hour period. This special ramping rate is less than a rate of 0.5 foot/hour.

Side channels and isolated pools were surveyed for stranded fish during test flows in 2002 on the Pit River. These surveys indicated there is a low potential for stranding of fish in the Pit River. This information was taken into consideration when establishing the specified ramping rates.

Rationale Statement for Streamflow Information

The intent of the Streamflow Information measure is to provide the public with information on streamflow conditions in Project-affected reaches of the Pit River. Many of the public recreation and river use activities in the Project area are affected by the magnitude of streamflow in the Pit River. Project operations affect streamflows in the Pit River. Presently, the public has limited ability to obtain streamflow information in advance of arriving at the river.

Whitewater boaters need information on streamflows in order to know where and when adequate streamflow is available for their particular craft and skill level. While recreation streamflow releases are planned for the Pit 5 reach during August and September of each year, boaters can also find opportunities for boating at other times of the year and in other reaches if they have access to flow information. Anglers need streamflow information to determine if they will likely be able to safely fish a particular reach or have streamflow levels that they find suitable for enjoyable fishing. By providing current day and the previous seven days of flow information, users can assess if flows are trending up or down as they plan their trips to the Pit River.

Providing streamflow information through publicly available media will aid recreationists in making decisions regarding their activities. Boater and angler groups currently have electronic bulletin boards capable of posting streamflow information. By utilizing these third party organizations, the public will be able to access the information through

Mr. J. Mark Robinson
October 29, 2003
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familiar channels and the Licensee remains "arms length" from how the information is ultimately used. It will be up to the individual to assess the suitability of a particular streamflow for their desired activity. The streamflow information system will also make information available regarding planned changes in streamflows such as maintenance outages or freshet flow releases.

In addition to making streamflow information available through phone and Internet, the measure provides for direct notice to the communities of Big Bend and the Big Bend Rancheria of planned freshet flow releases and recreation streamflow releases. These communities are located near the river and residents routinely recreate there. Additionally, members of the Pit River Tribe gather food such as fish and mussels from the river. Providing direct notification of planned significant streamflow releases to these communities will provide information that may be essential to their river-oriented activities.

APPENDIX C

FOREST SERVICE FINAL SECTION 4(e) CONDITIONS

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November 14, 2003

Via Electronic Filing

Ms. Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D. C. 20426

**Subject: FOREST SERVICE FINAL SECTION 4(e) CONDITIONS, SECTION 10(a)
RECOMMENDATIONS AND COMMENTS
Pit 3, 4, 5 Hydroelectric Project, FERC. No. 233**

Dear Ms. Salas:

Enclosed for filing are the Forest Service's Final Terms and Conditions for inclusion in a new license for this project, comments, recommendations and rationale pursuant to Sections 4(e) and 10(a) of the Federal Power Act. The Federal Energy Regulatory Commission (FERC) Office of Energy Projects staff issued a Draft Environmental Impact Statement (DEIS) for the Pit 3, 4, 5 Hydroelectric Project, FERC No. 233, in March 2003. Much of the project is located on lands of the Shasta National Forest, administered by the Lassen and Shasta-Trinity National Forests, USDA Forest Service.

This project does not conflict with any project of which we are aware that should be or has been constructed by the United States. It neither interferes with nor is inconsistent with the purposes for which the Shasta National Forest was created or acquired. The Forest Service has no objection to a license being issued, subject to certain conditions necessary for the protection and utilization of National Forest System lands and resources affected by the project.

Enclosure 1 contains conditions to be included in the license, necessary for the protection and utilization of the affected National Forest System lands. The conditions are based on the Forest Service review of the application, extensive coordination with Federal and State agencies and other members of the public, public comment, and consultation with the Licensee. These conditions are consistent with the goals, objectives, standards, and guidelines of the Lassen and Shasta-Trinity National Forests' Land and Resource Management Plans. Under authority delegated from the Secretary of Agriculture, the Forest Service considers these conditions necessary to avoid or mitigate resource and environmental impacts caused by proposed project operations.

Enclosure 2 contains final revised Section 10(a) Recommendations. These update the October 9, 2002 preliminary Section 10(a) Recommendations filed by the USDA Forest Service with the FERC. The Section 10(a) Recommendations focus on actions that indirectly affect National Forest System lands and resources.

Together, these Section 4(e) conditions and the Section 10(a) recommendations encompass the suite of Protection, Mitigation, and Enhancement measures developed by the Pit River Collaborative Team (PRCT). The PRCT has met with the Licensee for over the past five years to collaboratively determine study needs, discuss study results, and determine necessary measures that protect and enhance resource and recreational values and allow for the continued operation of the Pit 3, 4, and 5 Project. For example, the flow related license conditions #17 and #18 are resource measures developed by the PRCT and filed by Pacific Gas and Electric Company (PG&E) with the FERC on October 31, 2003. It is anticipated that the other members of the PRCT will provide letters of support to the FERC within the next month from their respective agencies or organizations regarding these Section 4(e) conditions and Section 10(a) recommendations.

Extensive rationale documents that describe the information and process used to develop and support the Section 4(e) conditions have been provided to the FERC and are already a part of the administrative record. Rather than reiterating previously submitted rationale, this submittal contains limited new rationale associated with a few of the 10(a) Recommendations. For reference, previously filed documents providing rationale and support for the Forest Service 4(e) and 10(a) submittals are listed below:

- 1) Forest Service, October 9, 2002, "Pit 3, 4, and 5 Preliminary 4(e) Terms and Conditions, 4(e) Rationale, and 10(a) Recommendations" (FERC accession #20021009-5035 and 5056).
- 2) Forest Service, May 19, 2003, "Forest Service Comments to the FERC DEIS, Forest Service Revised Preliminary 4(e) Conditions PG&E- Pit 3, 4 and 5 Hydroelectric Project No. 233" (FERC accession #20030519-5052).
- 3) Forest Service, September 25, 2003, "Forest Service Response to FERC Clarification Meeting and Comments on Additional PG&E Studies, Pit 3, 4, and 5 Hydroelectric Project No. 233" (FERC accession #20031001-0042).
- 4) PG&E, October 31, 2003, "Collaborative Agreement on Proposed Protection, Mitigation, and Enhancement Measures" (FERC accession #20031103-0035).

The Forest Service has finalized the Biological Evaluations (BE) for Aquatic Vertebrates and Invertebrates, and for Terrestrial Wildlife Species. The Forest Service will file these documents under separate cover with the FERC. Finalization of these two documents did not result in any changes to the species effects determinations. In general, the Terrestrial Wildlife BE updated information about peregrine falcons and specified Limited Operating Periods for peregrines and goshawk nest sites. It also provides guidance to avoid affecting sensitive bats that may be present in the Tunnel adit below the Pit 4 dam. The conclusions and determinations in the Aquatic Vertebrates and Invertebrates BE have been updated to reflect the final Collaborative flow conditions agreement. Additionally, it further clarifies the lack of effects to some aquatic species at higher instream flows, beyond the information provided by the Forest Service at the

August 28, 2003 FERC Clarification Meeting and in the Forest Service follow-up letter of September 25, 2003, as referenced above.

In a review of the Final Application Project Boundary Maps, it appears there may be a need to update and expand the project boundary to ensure that project related facilities are incorporated into the boundary. For example, it appears that several recreation facilities around Lake Britton that are directly Project related are not entirely encompassed within the project boundary. The enclosed license conditions may also result in the addition of new facilities that are not currently within the Project boundary. The Forest Service would like to meet with the Licensee and the FERC to discuss this issue prior to the issuance of the license.

Finally, the FERC requested updated dollar estimates for several elements during the FERC Clarification Meeting. The Forest Service has worked with the Licensee to determine appropriate costs for some of the actions and activities associated with implementing the Section 4(e) conditions and Section 10(a) recommendations. Several conditions such as the gravel augmentation program have dollar limits included as part of the condition. The Forest Service suggests that the FERC could implement ceilings for several of the other broad categories. Since the development and implementation of many of the conditions are contingent upon the collaborative development of plans, these ceilings could be used to guide the plan details. The Forest Service recommends the following ceilings be based on 2003 dollars and be inflated over the life of a 30 year license as necessary using the Consumer Price Index (CPI) as the inflation factor:

- Road conditions and recommendations package - \$6 million
- Recreation conditions and recommendations - \$6 million
- Biological monitoring for entire project - \$6 million

The Forest Service appreciates the opportunity to provide this 4(e) package prior to the release of the Final Environmental Impact Statement, so that the FERC can adequately analyze the Forest Service mandatory license conditions as well as the recommendations. Please contact Kathy Turner, Lassen National Forest (530-336-5521), if you have questions.

Sincerely,

/s/

Jack Gipsman
Deputy Regional Attorney
Office of General Counsel

Enclosures

cc: FERC service list
Forest Service mail list

PRCT

John Mudre, FERC

Kathy Turner, HCRD

Kathy Valenzuela, STNF

Julie Tupper, RHAT

Certificate of Service

I hereby certify that I will serve the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Fall River Mills, California, this 14th day of November, 2003.

/S/ _____
Kathy Turner

Enclosure 1

Pit 3, 4, and 5 Final 4(e) Terms and Conditions

To clarify modifications between the May 2003 Revised Preliminary 4(e) Conditions, and these Final 4(e) Conditions, we have included the crosswalk table below.

Standard Conditions:

5/03 #	2003 Revised Preliminary 4(e) Title	10/03 #	2003 Final 4(e) Title	Remarks
1	Approval of Changes After Initial Construction	1	Approval of Changes After Initial Construction	
2	Annual Consultation on Affected National Forest Resources	2	Annual Consultation on Affected National Forest Resources	Considerable rewording
3	Maintenance of Improvements on or Affecting NFSL	3	Maintenance of Improvements on or Affecting NFSL	Language more abbreviated
4	Existing Claims on NFSL	4	Existing Claims on NFSL	
5	Compliance with Regulations on NFSL	5	Compliance with Regulations on NFSL	
6	Protection of United States Property	6	Protection of United States Property	Reworded
7	Surrender of License or Transfer of Ownership	7	Surrender of License or Transfer of Ownership	Reworded
8	Self Insurance	8	Self Insurance	
9	Damage to lands of United States – High hazard	9	Damage to lands of United States – High hazard	
10	Risks and Hazards on National Forest System Lands (NFSL)	10	Risks and Hazards on National Forest System Lands (NFSL)	
11	Licensee Signs on or affecting NFSL		Incorporated into #20 d	
12	Pesticide-Use Restrictions on NFSL	11	Pesticide-Use Restrictions on NFSL	Minor word change
13	Access by the United States	12	Access by the United States	
14	Modification of Forest Service Conditions for Protection of NF Resources	13	Forest Service Reserves the Right to Revise Section 4(e) Conditions	Modified language more specific than 1 st version

Project Specific Conditions:

2002 #	2003 Revised Preliminary 4(e) Title	2003 #	2003 Final 4(e) Title	Remarks
		14	Coordination with Projects in the Pit River System	New Condition
		15	Protection of Forest Service Special Status Species	Formerly included as a plan in #20 c
		16	Erosion and sediment control	Formerly included as a plan in #20 a
15	Flow Regime for Affected NFSL	17	Flow Regime for Affected NFSL <ul style="list-style-type: none"> ▪ Min Instream Flow ▪ Instream Flow Measurement ▪ Ramping Rates ▪ Freshet Flow Release ▪ Reservoir Operations 	As per PRCT consensus
16	Management of Planned Spill Events Affecting NFS Resources	18	Management of Spill Events Affecting NFS Resources	PRCT language
18	Reservoir and Afterbay Dredging Affecting NFSL	19	Reservoir and Afterbay Dredging Affecting NFSL	Reworded
20	Land & Habitat Management Plans (LHMP) for Mitigating Project Affects to NFS Resources	20*	Land Resource Plans for Mitigating Project Effects to NFS Resources <ul style="list-style-type: none"> ▪ Tunnel spoil pile mgt plan ▪ Fire Mgt and Response Plan ▪ Visual Mgt Plan ▪ Sign Plan 	Changed to lands based plans only for clarity. See new #23 for habitat plans.
17	Gravel and Woody Debris Programs to Benefit NFS Resources	21	Gravel Management and Woody Debris Plans to Benefit NFS Resources	
19	Water Temperature Monitoring & Maintenance Plan For Affected NFSL	22	Water Quality and Temperature Monitoring Plan for Affected NFSL	

2002 #	2003 Revised Preliminary 4(e) Title	2003 #	2003 Final 4(e) Title	Remarks
		23	Biological Resources Management Plans for Mitigating Project Effects to NFS Resources: <ul style="list-style-type: none"> ▪ Technical Review Group ▪ Fish Population trend and condition ▪ Foothill YLF monitoring ▪ Western Pond Turtle monitoring ▪ Interagency Bald Eagle Mgt plan ▪ Terrestrial Wildlife Mitigation and Monitoring ▪ Vegetation and Noxious Weed Mgt Plan 	Previously in #20
		24	Cultural Resources Management Plan	Previously part of #20 f
		25	Project Patrol for Resource Protection of NFS Lands	New Plan as agreed to with Licensee
		26	Recreation Management Plan <ul style="list-style-type: none"> ▪ Recreation facilities Maintenance, Improvement and Expansion ▪ Water Surface Access and Mgt ▪ Information, Education, and Interpretation Plan ▪ Streamflow information ▪ Recreation Monitoring and Reporting 	Previously part of #20 g
		27	Roads and Facilities Management Plan <ul style="list-style-type: none"> ▪ Planning ▪ Project Road Rehabilitation ▪ Operation & Maintenance OHV and Vehicle Mgt Plan	Previously part of #20 h

**PACIFIC SOUTHWEST REGION, USDA FOREST SERVICE
FINAL 4(e) TERMS AND CONDITIONS
NECESSARY FOR THE PROTECTION AND UTILIZATION OF THE
LASSEN AND SHASTA-TRINITY NATIONAL FORESTS
Pit 3, 4, and 5 HYDROELECTRIC PROJECT,
FERC No. 233**

General

The Forest Service (FS) provides the following final 4(e) conditions for the Pit 3, 4, and 5 Hydroelectric Project, FERC No. 233 (Project), in accordance with 19 CFR 4.34(b)(1)(i).

License articles contained in the Federal Energy Regulatory Commission's (Commission) Standard Form L-1 (revised October 31, 1975) issued by Order No. 540, cover those general requirements that the Secretary of Agriculture, acting by and through the Forest Service, considers necessary for adequate protection and utilization of the land and related resources of the Shasta National Forest, as administered by the Lassen and Shasta-Trinity National Forests. Section 4(e) of the Federal Power Act states the Commission may issue a license for a project within a reservation only if it finds that the license will not interfere or be inconsistent with the purpose for which such reservation was created or acquired. This is an independent threshold determination made by FERC, with the purpose of the reservation defined by the authorizing legislation or proclamation (see *Rainson v. FERC*, 106 F.3d 269 (9th Cir. 1977)). The FS may rely on broader purposes than those contained in the original authorizing statutes and proclamations in prescribing conditions (see *California Edison v. FERC*, 116F.3d 507 (D.C. Cir. 1997)).

Under authority of Section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the following terms and conditions are deemed necessary for adequate protection and utilization of the Shasta National Forest lands and resources. These terms and conditions are based on those resource and management requirements enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest System or prescribing the management thereof (such as the Wilderness Act or the Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Land and Resource Management Plans prepared in accordance with the National Forest Management Act. Specifically, the 4(e) conditions are based on the Land and Resource Management Plans (as amended) for the Lassen and Shasta-Trinity National Forests, as approved by the Regional Forester of the Pacific Southwest Region. Therefore, pursuant to section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of National Forest System lands shall also be included in any license issued.

STANDARD CONDITIONS

Condition No. 1 - Approval of Changes After Initial Construction

Notwithstanding any license authorization to make changes to the project, the Licensee shall obtain written approval from the Forest Service prior to making any changes in any constructed project features or facilities, or in the uses of project lands and waters or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and a minimum of 60-days prior to initiating any such changes, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes. The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This article does not relieve the Licensee from the requirement for license amendment or other requirements of Article 2 or Article 3 of this license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions the Secretary of Agriculture may make pursuant to section 4(e) of the Federal Power Act.

Condition No. 2 - Annual Consultation on Affected National Forest Resources

The Licensee shall consult with the Forest Service between January 10 and March 15 of each year in regard to measures needed to ensure protection and utilization of the National Forest System land and resources affected by the Project. Representatives from the US Fish and Wildlife Service, California Department of Fish and Game, or other interested agency representatives concerned with operation of the project may request to attend the meeting. Consultation shall include, but not be limited to:

- A status report regarding implementation of license conditions;
- Results of any monitoring studies performed over the previous year in formats agreed to by the Forest Service and the Licensee during development of study plans;
- Review of any non-routine maintenance;
- Discussion of any foreseeable changes to project facilities or features;
- Discussion of any necessary revisions or modifications to plans approved as part of this license;
- Discussion of report/log of Project patrol person and any actions taken or recommended, or coordination needed to correct any identified problems.
- Discussion of needed protection measures for species newly listed as threatened, endangered, or sensitive or, changes to existing management plans that may no longer be warranted due to delisting of species or, to incorporate new knowledge about a species requiring protection; and
- Discussion of elements of current year maintenance plans, e.g. road maintenance.

A record of the meeting shall be kept by the Licensee and shall include any recommendations made by the Forest Service for the protection of National Forest System lands (NFSL) and resources. The Licensee shall file the meeting record with the Commission no later than 60 days following the meeting. A copy of the certified record for the previous water year regarding instream flow and reservoir elevation records, reports of any out-of-season operational spills for that past year, monitoring reports, and other pertinent records shall be provided to the Forest Service at least 10 days prior to the meeting date, unless otherwise agreed.

Copies of other reports related to project safety and non-compliance shall be submitted to the Forest Service concurrently with submittal to the FERC. These include, but are not limited to: any non-compliance report filed by the licensee, geologic or seismic reports, and structural safety reports for facilities located on or affecting NFSL.

The Forest Service reserves the right, after notice and opportunity for comment, to require changes in the project and its operation through revision of the 4(e) conditions to accomplish protection and utilization of National Forest lands and resources.

Condition No. 3 - Maintenance of Improvements on or Affecting NFSL

The Licensee shall maintain all its improvements and premises on National Forest System lands (NFSL) to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the Forest Service. Disposal will be at an approved existing location, except as otherwise agreed by the Forest Service.

Condition No. 4 - Existing Claims on NFSL

The license shall be subject to all valid claims and existing rights.

Condition No. 5 - Compliance with Regulations on NFSL

The Licensee shall comply with the regulations of the Department of Agriculture and all Federal, State, county, and municipal laws, ordinances, or regulations in regard to the area or operations covered by this license, to the extent federal law does not preempt ordinances or regulations.

Condition No. 6 - Protection of United States Property

The Licensee shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license, and shall pay the United States for any damage resulting from negligence or from the violation of the terms of this license or of any law or regulation applicable to the National Forests by the Licensee, or by any agents or employees of the Licensee acting within the scope of their agency or employment.

Condition No. 7 – Surrender of License or Transfer of Ownership

As a condition of any transfer of the license or sale of the project, the Licensee shall guarantee or assure, in a manner satisfactory to the Forest Service, that the costs of surrender and restoration will be provided for by the Licensee or transferee. If deemed necessary by the Forest Service to assist it in evaluating the Licensee's proposal, the Licensee shall conduct an analysis, using experts approved by the Forest Service, to estimate the potential costs associated with surrender and restoration of the project area to Forest Service specifications. In addition, the Forest Service may require the Licensee to pay for an independent audit of the transferee to assist the Forest Service in determining whether the transferee has the financial ability to fund the surrender and restoration work specified in the analysis.

Condition No. 8 - Self Insurance

The Licensee shall indemnify, defend, and hold the United States harmless for any costs, damages, claims, liabilities, and judgments arising from past, present, and future acts or omissions of the Licensee in connection with the use and/or occupancy authorized by this license. This indemnification and hold harmless provision applies to any acts and omissions of the Licensee or the Licensee's heirs, assigns, agents, employees, affiliates, subsidiaries, fiduciaries, contractors, or lessees in connection with the use and/or occupancy authorized by this license which result in: (1) violations of any laws and regulations which are now or which may in the future become applicable, and including but not limited to environmental laws such as the Comprehensive Environmental Response Compensation and Liability Act, Resource Conservation and Recover Act, Oil Pollution Act, Clean Water Act, Clean Air Act; (2) judgments, claims, demands, penalties, or fees assessed against the United States; (3) costs, expenses, and damages incurred by the United States; or (4) the release or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment.

Condition No. 9 – Damage to Lands of United States - High Hazard

The Licensee is hereby made liable for all injury, loss, or damage to the United States land and property, including but not limited to fire suppression costs, directly or indirectly resulting from or caused by the Licensee's power lines covered by this license, or any other high risk use and occupancy of the area covered by this license, regardless of whether the Licensee is negligent or otherwise at fault, provided that the maximum liability without fault shall not exceed \$1,000,000 for any one occurrence, and provided further that the Licensee shall not be liable when such injury, loss, or damage results wholly, or in part, from a negligent act of the United States, or from an act of a third party not involving the facilities of Licensee.

Determination of liability for injury, loss, or damage, including fire suppression costs, in excess of the specified maximum, shall be according to the laws governing ordinary negligence.

Condition No. 10 - Risks and Hazards on National Forest System Lands (NFSL)

The Licensee is responsible for inspecting its site, right of way and immediate adjoining area for dangerous trees, hanging limbs, and other evidence of hazardous conditions and is responsible for removing such hazards, after securing permission from the Forest Service, except in an emergency where there is an imminent risk of death or injury to the public or damage to facilities in which case the Licensee shall notify the Forest Service of the action as soon as possible.

Condition No. 11 - Pesticide-Use Restrictions on NFSL

Pesticides shall not be used to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, undesirable fish, etc., without the prior written approval of the Forest Service. The Licensee shall submit a request for approval of planned uses of pesticides. The request must cover annual planned use and be updated as required by the Forest Service. The Licensee shall provide information essential for review in the form specified by the Forest Service. Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

The Licensee shall use on National Forest System land only those materials registered by the U.S. Environmental Protection Agency for the specific purpose planned. The Licensee shall strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Condition No. 12 - Access by the United States

The United States shall have unrestricted use of any road constructed within the project area for all purposes deemed necessary or desirable in connection with the protection, administration, management, and utilization of Federal lands or resources. The United States shall have the right to extend rights and privileges for use of the right-of-way and road thereon to States and local subdivisions thereof, as well as to other users, including members of the public, except contractors, agents and employees of the Licensee. The agency having jurisdiction shall control such use so as not unreasonably to interfere with use of the road by the Licensee.

Condition No. 13 - Forest Service Reserves the Right to Revise Section 4(e) Conditions

The Forest Service reserves the right to modify final Section 4(e) conditions submitted to FERC for inclusion in the new license for the Pit 3, 4, & 5 Hydroelectric Project, FERC No.233, to resolve any conflict between: 1) 4(e) conditions and water quality certificate conditions issued by the State of California Department of Water Resources Control Board, or 2) in response to new terms and conditions imposed by the existing or revised U.S. Fish and Wildlife Service Biological Opinion issued for the relicensing of the Project.

Condition No. 14 – Coordination With Projects In The Pit River System

If license measures for the upstream and downstream projects, (McCloud-Pit, Project No. 2106; Hat 1 and 2, Project No. 2661; and Pit 1, Project No. 2687) require changes in operation of the Pit 3, 4, & 5 Hydroelectric Project, FERC No.233, the Forest Service reserves the right, after notice and opportunity for comment, to require changes in the project and its operation through revision of Section 4(e) conditions.

PROJECT SPECIFIC CONDITIONS - GENERAL

Condition No. 15 – Protection of Forest Service Special Status Species

Before taking actions to construct new project features on NFSL (including, but not limited to, proposed recreation developments) that may affect Forest Service special status species (i.e. Forest Service sensitive, survey and manage, and management indicator species) or their critical habitat, the Licensee shall prepare a biological evaluation evaluating the potential impact of the action on the species or its habitat and submit it to the Forest Service for approval. In coordination with the Commission, the Forest Service may require mitigation measures for the protection of the affected species. Where required, the Licensee shall also provide a report to address impacts to survey and manage and management indicator species.

The biological evaluation shall

- Include procedures to minimize adverse effects to special status species.
- Ensure project-related activities shall meet restrictions included in site management plans for special status species.
- Develop implementation and effectiveness monitoring of measures taken or employed to reduce effects to special status species.

Condition No. 16 - Erosion and sediment control

The Licensee shall notify the Forest Service within 3 days in the event a project facility requires, or a project-related activity results in the need for emergency site stabilization, erosion protection, or sedimentation management and affects National Forest System land or resources. Any temporary measures necessary to stabilize the condition shall be implemented as soon as practicable and the Forest Service shall be informed of the steps taken. The Licensee shall obtain Forest Service approval prior to implementing any permanent remediation measures.

PROJECT SPECIFIC CONDITIONS – WATER RESOURCES

Condition No. 17 - Flow Regime for Affected NFSL

I. Minimum Instream Flow

The Licensee shall, beginning as early as reasonably practicable and within 3 months after license issuance, maintain minimum streamflows as specified below for the Pit 3 and Pit 4 bypass reaches. Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee.

All required minimum streamflows listed below are the average of seven days of the mean daily flow. Individual mean daily flows may be less than the required minimum streamflow. The instantaneous, 15-minute streamflow must be at least 90 percent of the required minimum streamflow.

Pit 3 Reach Required Minimum Streamflow

For the Pit 3 reach, the spill event that triggers a change in required minimum streamflow is defined as a flow period in the reach that lasts at least three consecutive days and has a 3-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum streamflow for the Pit 3 reach. Streamflow in the Pit 3 reach shall be measured as the sum of spillway flow calculated from hourly reservoir elevation to account for spill volume and the hourly mean release from a calibrated release valve at the dam or by other means acceptable to the USGS. The Pit 3 dam spill release gates and valves shall be operated as described in the Reservoir Operations section of this Condition.

A. Summer/Fall Required Minimum Streamflow:

- i. Summer is defined as the period extending from April 21 through August 31.
- ii. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or until November 30, whichever is earlier.
- iii. If no spill occurs between November 1 and April 20, the required minimum streamflow shall remain at the summer value throughout the winter.
- iv. The required minimum streamflow during summer shall be 300 cfs.
- v. The required minimum streamflow during fall shall be 280 cfs.

- vi. Following any spill, as defined above, between March 16 and June 15 the required minimum streamflow shall follow the flow regimen described in B. iv. below. Spills ending on or after June 16 shall be ramped back to the required summer minimum streamflow following the ramping rate specified in the Ramping Rates section of this Condition.

B. Winter Required Minimum Streamflow:

- i. As specified in the Reservoir Operation section of this Condition, the Licensee shall, within 24 hours following the cessation of the first spill event after November 1, but no later than December 1, fully deflate at least one of the Pit 3 Dam spillway bladder gates. At least one bladder gate shall remain deflated until the later of April 20 or until there is no flow passing the Pit 3 Dam in excess of the nominal required minimum streamflow for the Pit 3 reach. During this time period, the reservoir shall be operated so that the elevation of Lake Britton does not drop below 2,731.5 feet (NGVD) (2,751 feet, PG&E datum), as specified in the Reservoir Operations section of this Condition.
- ii. If a spill, as defined above, occurs after November 1 the required minimum streamflow following the cessation of the spill shall be 350 cfs. The required minimum streamflow shall remain at this rate until April 20 unless a spill occurs after March 15.
- iii. If no spill occurs between November 1 and April 20, the required minimum streamflow shall remain at the summer value throughout the winter.
- iv. If a spill, as defined above, occurs between March 16 and June 15, the required minimum streamflow following the cessation of the spill shall be 450 cfs for 14 days. The required minimum streamflow shall then be 400 cfs for the next 10 days and 350 cfs for 10 more days. Thereafter, the required minimum streamflow shall be set to the required summer minimum streamflow.

Pit 4 Required Minimum Streamflow

For the Pit 4 reach, the spill event that triggers a change in required minimum streamflow is defined as a streamflow period in the reach that lasts at least three consecutive days and has a 3-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum streamflow for the Pit 4 reach. Streamflow in the Pit 4 reach shall be measured at USGS gage 11362500 (Licensee gage PH30). The Pit 4 dam gates shall be operated as described in the Reservoir Operations section of this Condition.

C. Summer/Fall Required Minimum Streamflow:

- i. Summer is defined as the period extending from June 16 until August 31.
- ii. Fall is defined as the period extending from September 1 until the first spill, as defined above, after November 1 or until November 30, whichever is earlier.
- iii. If no spill occurs between November 1 and June 15, the required minimum streamflow shall remain at the summer value throughout the winter.
- iv. The required minimum streamflow during summer shall be 375 cfs.

- v. The required minimum streamflow during Fall shall be 350 cfs.
- vi. Following any spill, as defined above, between March 16 and June 15 the required minimum streamflow shall follow the flow regimen described in D. iii. Spills ending on or after June 16 shall be ramped back to the required summer minimum streamflow following the ramping rate specified in the Ramping Rates section of this Condition.

D. Winter Required Minimum Streamflow:

- i. If a spill, as defined above, occurs after November 1, the required minimum streamflow following the cessation of the spill shall be 450 cfs. The required minimum streamflow shall remain at this value until June 15 unless a spill occurs after March 15.
- ii. If no spill occurs between November 1 and June 15, the required minimum streamflow shall remain at the summer value throughout the winter.
- iii. If a spill, as defined above, occurs after March 15, the required minimum streamflow after cessation of spill shall decline in three steps, as specified below, when mean daily streamflow at USGS gage 11362500 (Licensee gage PH30) reaches approximately 700 cfs. After completion of the specified flow schedule, the required minimum streamflow shall be the summer required minimum streamflow.
 - a) From March 16 through April 30, the required minimum streamflow is 600 cfs;
 - b) From May 1 through May 31, the required minimum streamflow is 550 cfs; and
 - c) From June 1 through June 15, the required minimum streamflow is 500 cfs.
- iv. Spills ending on or after June 16 shall be ramped to the summer required minimum streamflow following the ramping rate specified in the Ramping Rates section of the Condition.

II. Instream Flow Measurement

The Licensee shall measure and document all instream flow releases in publicly available and readily accessible formats. For the purposes of measuring and documenting compliance with the required minimum instream flows in the Pit 3 and Pit 4 Project bypass reaches, the Licensee shall prepare and file with the Commission an Instream Flow Measurement Plan (Plan) that is approved by the Forest Service.

The Plan shall include a description of existing or proposed instream flow measurement gages or devices, including flow gages, spillway or reservoir outlet discharge measurement devices, etc., and a detailed proposal for measuring instream flow in each of the Project reaches with existing or proposed devices. The Plan must describe existing or proposed provisions for making mean daily flow data available to the public, and for making hourly and/or 15-minute gage data available to the Forest Service.

The Plan shall include evidence of gage calibration and historical and recent cross-section data, if applicable. The Licensee shall submit the Plan to the Forest Service as soon as practicable and no later than one year after license issuance and shall not begin construction of flow measurement devices or implementation of Plan elements until the Plan has been formally approved in writing from the Forest Service and filed with the Commission.

In the interim, prior to approval and implementation of the Plan, the Licensee shall maintain continual compliance with the Pit 4 minimum instream flow schedule at the existing Pit 4 reach gage (USGS gage 11362500 (PH 30)). There is presently no flow measurement device in the Pit 3 Project reach. Interim to implementation of the above Plan, compliance methodology for the Pit 3 bypass reach will jointly be agreed to by the Licensee and Forest Service based on the best available methods.

III. Ramping Rates

In order to prevent adverse effects due to rates of change in streamflow releases that are inconsistent with natural rates of streamflow variation, the Licensee shall follow the ramping rates specified below when making streamflow releases from Pit 3 and Pit 4 Dams unless a different ramping rate is specified in another measure. These ramping rates shall be implemented as soon as practicable after license issuance dependent upon facility capability.

A ramping rate is the rate of change in stream stage height over a time period, such as 0.5 foot/hour, that shall be followed in each hour, up or down. The allowable change in stage height is applied to the current hour streamflow value to get the next hour allowable streamflow value. The Licensee shall be deemed in compliance with the up and down ramping rate if at least 75 percent of the periodic changes are less than the specified ramping rate, and all of the periodic changes are less than 150 percent of the specified ramping rate.

Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency and law enforcement activity, and critical electric system emergencies beyond the control of the Licensee.

- a. Ramping Rate for Freshet Flow Releases: A freshet flow may be released in March of some years, and will consist of a 21-day flow event that is described in detail in the Freshet Flow Release measure. The ramping rate to reach the daily target values for freshet flows shall be 0.5 foot/hour, up and down.
- b. Ramping Rate after Spills Influenced by Powerhouse Outages: As described in the Reservoir Operations section of this Condition, some spills may include, or be composed

entirely of, flow that should be passing through a powerhouse but is released as spill due to a powerhouse outage. The Reservoir Operations measure specifies that when returning the powerhouse to full load, the daily decrease of such spills should not exceed 50 percent of the difference between the flow passing a dam and the required minimum streamflow for the reach. The final step to the required minimum streamflow can occur when the difference between the spill flow and required minimum streamflow is less than 200 cfs. The ramping rate for the downstream reach shall be 0.5 foot/hour or less and there shall be an hour separation between each step until the daily decrease in spill is reached.

- c. Ramping Rate Before and After Out-of-Season Spills: As described in Condition 18, out-of-season spills past the Pit 3 and Pit 4 Dams may occur during summer and fall. In some cases, the Licensee may be able to anticipate that an out-of-season spill is imminent because the storage capacity of the affected reservoir will be exceeded. In this case, the Licensee shall make a good faith effort to initiate streamflow releases that ramp up to the expected spill rate in at least three steps.

The out-of-season spill shall be ramped down at a rate that is dependent on the duration of the spill. If the spill was less than 24 hours in duration, the down ramp shall be at a rate of 0.5 foot/hour. If the spill was longer than 24 hours in duration, the down ramp shall be at a rate of 0.5 foot/hour, but four hours shall separate each adjustment so that the down ramp is more gradual.

- d. Ramping Rate for Recreation Streamflow Releases: The ramping rate up and down for recreation streamflow releases shall be 0.5 foot/hour or less. Both up and down ramping steps shall be implemented every other hour until the specified recreation streamflow release (ramp up) or the required minimum streamflow (ramp down) is reached.
- e. Ramping Rate for Changes in Required Minimum Streamflow: Because the magnitude of changes in required minimum streamflow is less than the change in streamflow associated with a 0.5-foot change in stage height, no ramping is required for these changes in streamflow releases.

IV. Freshet Flow Release

In order to assure that a flow sufficient to maintain channel conditions and maintain the riparian community will occur at a frequency of at least every second year, the Licensee shall make freshet flow releases into the Pit 3 and Pit 4 reaches as described below. Project reaches shall be considered separately and independently when determining if a freshet flow is required. The Licensee shall not initiate a freshet flow in the Pit 4 reach if mean daily water temperature at USGS gage 11362500 (Licensee gage PH30), exceeds 11° C for two consecutive days in the two-week period prior to the scheduled initiation of the freshet flow. The trigger for not initiating a freshet flow in the Pit 4 reach may be modified with approval of the FS in consultation with CDFG, FWS, and SWRCB, based on ecological results achieved with the above temperature trigger.

The following planning events and action shall be implemented each year:

1. If, as of January 1 of each year, there has been no spill, as defined below, in the previous 15 months into a given Project-affected river reach, the Licensee shall notify the FS and interested parties that there is a potential need for a freshet flow release for that reach during the upcoming March.
2. If no spill has occurred as per item 1, the Licensee shall post, following the provisions in License Condition 26, "Recreation Management Plan" under the "Streamflow Information" section, a notice prior to February 15, of a planned freshet flow for that reach beginning between March 1 and March 7, scheduled so that the peak flow occurs over a weekend to facilitate whitewater boating opportunities. Additionally, the Licensee shall notify the community of Big Bend and the Big Bend Rancheria.
3. A freshet flow shall have the following characteristics: the duration of the event including the flow increase and decrease and the peak must be at least 21 days in length; the instantaneous peak flow magnitude must be at least 1,500 cfs, and there must be a 2-day average flow of at least 1,500 cfs. After the peak, streamflow shall decrease in five approximately equal steps of magnitude and duration over the remaining days of the freshet period, ending at the winter required minimum streamflow for the reach.
4. For the purposes of this measure, spill is defined as streamflow event at a Project dam during the 17 months prior to the March 1 freshet flow implementation date that meets all of the following characteristics: occurs between December 1 and May 31; has a cumulative volume of at least 25,000 ac-ft; has a cumulative duration of at least 21 days; and has at least two average daily flows exceeding 1,500 cfs. Spill may be made up of natural and released flows.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee.

Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

V. Reservoir Operations

In order to allow spills from Project reservoirs to increase and decrease at a rate resembling the natural unimpaired condition, the Licensee shall, beginning as early as reasonably practicable and no later than 6 months after license issuance, operate Project dams, reservoirs, and powerhouses according to the operation protocols specified below.

The requirements of this measure are subject to temporary modification if required by equipment malfunction, emergency conditions or law enforcement activity, or critical electric system emergency beyond the control of the Licensee. The Licensee shall notify the FS, CDFG, and

SWRCB prior to any temporary modification, and shall notify these agencies within 48 hours that any temporary modification has occurred.

Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

For the purposes of this measure, a spill event is defined as a flow period that lasts at least three consecutive days and has a 3-day mean of more than 300 cfs (and a volume of at least 1,800 acre feet) above the required minimum streamflow.

Operation Protocols for Pit 3 Dam, Lake Britton, and Pit 3 Powerhouse

1. The year-round minimum water surface elevation of Lake Britton shall be 2,731.5 feet (NGVD) (2,751 feet, PG&E datum).
2. Each year, within 24 hours following the cessation of the first spill event after November 1, but no later than December 1, at least one of the Pit 3 Dam spillway bladder gates shall be kept in the fully deflated position.
3. The Licensee shall take reasonable care to prevent a sudden release of flow when deflating the bladder gates if the bladder gates must be deflated as per item 2 above and Lake Britton surface elevation is at 2,732.5 feet (NGVD) (2,752 feet, PG&E datum) or higher with the bladder gates inflated.
4. During the period from December 1 through at least April 20 of each year, Lake Britton elevations shall be maintained between 2,731.5 and 2,733.5 feet (NGVD) (2,751 and 2,753 feet, PG&E datum) to the greatest extent practicable by regulating flow through the Pit 3 Powerhouse.
5. At least one of the Pit 3 Dam spillway bladder gates shall remain deflated until April 20 or until there is no flow passing the Pit 3 Dam in excess of the required minimum streamflow for the Pit 3 reach, whichever is later.
6. The maximum allowable Lake Britton water surface elevation shall be 2,735.5 feet (NGVD) (2,755 feet, PG&E datum) between April 21 and the Saturday preceding Memorial Day weekend.
7. The maximum normal water surface elevation of Lake Britton shall increase to 2,737.5 feet (NGVD) (2,757 feet, PG&E datum) on the Saturday preceding Memorial Day Weekend or until there is no streamflow passing the Pit 3 Dam in excess of the required minimum streamflow for the Pit 3 reach, whichever is later.

8. If after April 20, and after the streamflow in the Pit 3 reach has receded to the minimum required streamflow, the inflow to Lake Britton increases to a magnitude that requires deflation of a bladder gate to keep the elevation of Lake Britton within the levels specified above, the bladder gate shall remain deflated until streamflow in the Pit 3 reach recedes to the required minimum streamflow.
9. If the Pit 3 Powerhouse is operating at less than full load during a spill event, and is able to return to full load, the Licensee shall utilize the following protocol to prevent a rapid cessation of spill when increasing powerhouse load:
 - Powerhouse load shall be increased in steps;
 - Each step shall not exceed 50 percent of the streamflow passing Pit 3 dam in excess of the required minimum streamflow for the Pit 3 reach, and
 - There shall be at least a 24-hour interval between steps.

This protocol applies until the Pit 3 Powerhouse reaches full load or the rate of streamflow passing Pit 3 Dam is less than 200 cfs above the required minimum streamflow for the Pit 3 reach. If the powerhouse is not at full load at this point, the streamflow passing the Pit 3 dam may be reduced to the required minimum streamflow.

Operation Protocols for Pit 4 Dam, Pit 4 Reservoir, and Pit 4 Powerhouse

The normal operating elevation for Pit 4 Reservoir shall be between 2,415.5 feet and 2,422.5 feet (NGVD) (2,435 feet and 2,442 feet, PG&E datum).

During periods of increasing inflow to Pit 4 Reservoir, the following steps shall be taken, to the extent necessary, and in the sequence indicated, until inflow ceases to increase:

1. As inflow to Pit 4 Reservoir increases, Pit 4 Powerhouse flows shall be ramped up to match inflow, up to full powerhouse load.
2. If inflow to Pit 4 Reservoir continues to increase, and the reservoir water surface elevation reaches 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), the #1 low-level outlet gate shall be fully opened. As the #1 low-level outlet gate is opened streamflow shall be transferred smoothly from spill to release. The minimum streamflow release valve shall be closed to prevent plugging with sediment or debris.
3. Step 2 above shall be repeated as required for each of the remaining two low-level outlets gates.
4. If inflow continues to increase, and the reservoir water surface elevation again reaches 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), all three low-level outlets shall be closed and the #2 spillway drum gate shall be lowered, smoothly transferring the release from the low-level outlets to the open spillway.

5. If inflow continues to increase, and the reservoir water surface elevation again reaches 2,424.2 feet (NGVD) (2,443.7 feet, PG&E datum), step 2 above shall be repeated until all three low level outlets are opened or inflow ceases to increase.
6. If inflow continues to increase, and the reservoir water surface elevation again reaches 2,424.2 (NGVD) feet (2,443.7 feet, PG&E datum), step number 4 shall be repeated for the #1 spillway drum gate.
7. Further inflow increases shall be allowed to pass through the spillway.

In order to minimize flow pulses during the recession of spill flow and after inflow has reached a peak and inflow to Pit 4 Reservoir is decreasing, the Licensee shall take the following actions in the sequence listed, beginning with the action corresponding to the actual peak inflow:

1. As inflow to the reservoir declines, and the water surface elevation drops to the raised drum gate elevation of 2,423.5 feet (NGVD) (2,443.0 feet, PG&E datum), the # 1 spillway drum gate shall be raised and all three low-level outlets shall be opened, smoothly transferring a portion of the spill flow to release flow.
2. As inflow to the reservoir continues to decline, and the water surface elevation again drops to 2,423.5 feet (NGVD) (2,443.0 feet, PG&E datum), the # 3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
3. As inflow to the reservoir continues to decline, and the water surface elevation drops to 2,415.5 feet (NGVD) (2,435.0 feet, PG&E datum), seven feet below the maximum elevation of the raised drum gate, the # 2 spillway drum gate shall be raised and all low-level outlets shall again be opened, smoothly transferring spill flow to release flow.
4. As inflow to the reservoir continues to decline, and the water surface elevation drops to 2,423.5 feet (NVD) (2,443.0 feet, PG&E datum), the # 3 low-level outlet shall be closed. This step shall be repeated until all three low-level outlets are closed.
5. As the # 1 low-level outlet is closed, the minimum streamflow release valve shall be opened to the appropriate required minimum streamflow release setting.
6. If the Pit 4 Powerhouse is operating at less than full load during a spill event, and is able to return to full load, the Licensee shall utilize the following protocol to not cause a rapid cessation of spill when increasing powerhouse load by utilizing the following protocol:
 - o Powerhouse load shall be increased in steps;
 - o Each step shall not exceed 50 percent of the flow passing Pit 4 dam in excess of the required minimum streamflow for the Pit 4 reach; and
 - o There shall be at least a 24-hour interval between steps.

This protocol applies until the powerhouse reaches full load or the rate of streamflow passing Pit 4 Dam is less than 200 cfs above the required minimum streamflow for the Pit

4 reach. If the powerhouse is not at full load at this point, the streamflow passing the Pit 4 dam may be reduced to the required minimum streamflow.

Condition No. 18 – Management of Spill Events Affecting NFS Resources

During the license term, the Licensee shall provide written notification to the Forest Service 90 days prior to any planned or scheduled maintenance outages in the Pit 3 and 4 Project bypassed reaches. The notification shall include a description of Project and coordinated measures the Licensee plans to take to minimize the magnitude and duration of resulting spills into the Project reaches, and appropriate selection of the seasonal timing of the planned outage spill to lessen negative ecological effects. The Licensee shall not proceed with the planned maintenance outage without the formal written approval of the Forest Service.

The Licensee shall operate the Project in a manner that does not result in discretionary, out-of-season spill flows in excess of twice the required minimum required streamflow at Pit 3 Dam and Pit 4 Dam. An out-of-season spill is defined as a spill that occurs during the normally non-spill summer and fall period. In order to avoid such spills, the Licensee shall take all reasonable controllable actions, which shall include, as a first priority, utilization of Project storage.

In the event an out-of-season spill occurs, the Licensee shall take reasonable controllable actions to minimize the magnitude, duration, and potential adverse ecological impacts of such spill. Such actions shall include, to the extent practicable, ramping the spill flow up and down as described in the Ramping Rates measure. In the event a discretionary out-of-season spill occurs, the Licensee shall develop, through consultation with FS, CDFG, SWRCB, and FWS, and implement reasonable actions to mitigate for identified adverse ecological impacts of such spill. The Licensee shall not be required by this measure to provide mitigation for impacts reasonably related to recreation streamflow releases. The Licensee shall prepare, maintain, and on an annual basis provide to FERC, FS, CDFG, SWRCB, and FWS a record of any out-of-season spills, identifying the affected reach, hourly discharge, the maximum flow magnitude, dates and duration, and cause of spill.

Where facility modification is required to implement the requirements of this measure, the Licensee shall complete such modifications as soon as reasonably practicable and no later than 3 years after license issuance. Prior to completion of such required facility modifications, the Licensee shall make a good faith effort to meet the requirements of the measure within the capabilities of the existing facilities.

The requirements of this measure are subject to temporary modification if required by equipment malfunction that directly results in non-discretionary spills, emergency and law enforcement activity, and critical electric system emergencies beyond the control of the Licensee. Further, this measure does not apply to any required recreation streamflow releases.

Condition No. 19 - Reservoir and Afterbay Dredging Affecting NFSL

In the event it is necessary to dredge any project forebay or reservoir, the Licensee shall hold an initial consultation meeting with the Forest Service at least 90 days prior to any anticipated dredging to determine if there is a potential to impact National Forest System lands or resources. Following consultation with the Forest Service the Licensee shall develop a plan which at a minimum shall include:

- The reason for dredging,
- A description of material to be dredged,
- Approximate quantities of dredged material,
- Selected method of dredging along with alternatives considered,
- Location of any disposal sites considered,
- Mitigation measures and disposal site stabilization plans, and
- Schedule

Forest Service approval will be required before implementation of any dredging that affects NFS lands or resources. Documentation of correspondence with the Forest Service shall also be filed with the Commission prior to implementation of any dredging activity.

In addition the Licensee shall consult with the California Department of Fish and Game, State Water Resources Control Board, Fish and Wildlife Service, and U.S. Army Corps of Engineers and obtain any necessary approvals before proceeding.

PROJECT SPECIFIC CONDITIONS -RESOURCE PLANS

Condition No. 20 – Land Resource Plans for Mitigating Project Effects to NFS Resources

Within the timeframes described below, and in consultation with applicable Federal and State agencies, the Licensee shall file with the Commission Land Resource Plans that are approved by the Forest Service, as they relate to resource management on the National Forest. The plans shall include:

- a. Tunnel Spoil Pile Management Plan
- b. Fire Management And Response Plan
- c. Visual Management Plan
- d. Sign Plan

a. Tunnel Spoil Pile Management Plan

The Licensee shall within one year of license issuance prepare a tunnel spoil pile management plan to address existing and future spoil originating from project construction on NFSL. At a minimum the plan shall address the following for piles of native material approved by the Forest Service to be left on NFSL:

General:

- Stabilization/erosion control (using only certified weed-free straw),
- Revegetation,

- Noxious weed management,
- Foreign material treatment, including removal of visible non-native materials,
- Monitoring of water quality (as per pre-licensing study protocol) and adherence to BMPs,
- Consideration of visual quality,
- Utilization of material (especially Pit 4 valve house site #4P), and
- Other measures (i.e. recreational overlook improvements at Pit 4 dam site #4D dispersed camping at the Adit Pile #4A, road closure #4D).

Specifically:

- Spoil Pile site #4P (at Pit 4 powerhouse) management : (This is the only site located on NFSL currently considered for disposal of project related native materials including dirt, rocks, and vegetation, but not asphalt or other non-native wastes).
 - a. Develop a stabilization/rehabilitation plan for the site incorporating future placement of road spoils from project roads, site leveling, slope revegetation, and other erosion prevention measures.
 - b. Show the current site (after above work considered) and calculations showing the amount of material the site could hold for future spoils placement.
 - c. Include a final pit plan including reclamation that shall also be submitted to Shasta County for compliance with Surface Mining and Reclamation Act (SMARA) regulations.
 - d. Additional visual mitigations may be necessary if this site is additionally used as a vista point for the public.

The Licensee shall prepare the plan after consultation with the Forest Service, State Water Resources Control Board, California Department of Fish and Game, and Pit River Tribe. Upon Commission approval, the Licensee shall implement the plan.

b. Fire Management and Response Plan

Within six months of license issuance the Licensee shall file with the Commission a Fire Management and Response Plan developed in consultation with the Forest Service, California Department of Forestry and Fire Protection, and the Big Bend Volunteer Fire Department. At a minimum the plan shall address the following categories:

- 1) Fuels treatment/Vegetation Management
 - Identification of fire hazard reduction measures to prevent the escape of project-induced fires.
- 2) Public awareness
 - Develop public awareness such as signs and brochures to educate the public about fire danger and safety
- 3) Prevention
 - Availability of fire access roads, community road escape routes, helispots to allow aerial firefighting assistance in the steep canyon, water drafting sites and other fire suppression strategies.
 - Develop fire prevention restrictions based on fire danger that are consistent with adjacent public land ownership for project-induced recreation on Licensee lands.

- Address fire danger and public safety associated with project induced recreation, including fire danger associated with dispersed camping, existing and proposed developed recreation sites, trails, and vehicle access.
- 4) Emergency response preparedness
 - Analyze fire prevention needs including equipment and personnel availability including fire patrols.
 - 5) Reporting
 - Provide the Forest Service a list of the location of available fire prevention equipment and the location and availability of fire prevention personnel.
 - Licensee shall report any project related fires to the Forest Service as soon as practicable.
 - 6) Fire control/extinguishing

Include appropriate measures from the Vegetation Management Plan condition and assure fire prevention measures will meet water quality BMPs. Upon Commission approval, the Licensee shall implement the plan.

c. Visual Management Plan

Within 1 year of license issuance, the Licensee shall file with the Commission a Visual Management Plan that is approved by the Forest Service for any NFS lands that are visually affected by the Project. As a minimum the Plan shall address:

- Clearings, spoil piles, and project facilities, such as diversion structures, penstocks, pipes, ditches, powerhouses, other buildings, transmission lines, corridors, and access roads.
- Facility configurations, alignments, building materials, colors, landscaping, and screening.
- An Implementation schedule to bring the project facilities into compliance with applicable National Forest Land and Resource Management Plan direction.
- Mitigation measures that shall include, but are not limited to:
 - Surface treatments with colors and materials that are in harmony with the surrounding landscape.
 - Use of native plant species to screen facilities from view, where appropriate.
 - Reshaping and revegetating disturbed areas to blend with surrounding scenic characteristics.
 - Development of scenic overlooks along scenic routes.
 - Removal of project induced debris piles which detract from the visual quality.
 - General maintenance and upkeep of facilities.

Upon Commission approval, the Licensee shall implement the plan.

d. Sign Plan

The Licensee shall prepare in consultation with the Forest Service, State Parks, and other interested parties, within one year of license issuance, a Sign Plan that shall conform to the Manual of Uniform Traffic Control Devices, Forest Service sign handbook, and other applicable standards. As a minimum the Plan is to include the location, design, size, color, and message for the following types of signs:

- Information and education signs
- Fire Prevention signs
- Regulatory and warning signs
- Project license signs
- Road signs
- Recreation signs
- Directional signs to assist non-local visitors
- Safety signs
- Sign format/consistency throughout project

The Plan shall also address maintenance standards so that all signs are maintained in a neat and presentable condition. Signs which are to be placed on National Forest System lands shall be approved by the Forest Service. The Licensee shall not be required to consult or obtain the prior approval of the Forest Service for signs on Licensee owned land that are not visible from National Forest System lands.

Upon Commission approval, the Licensee shall implement the plan.

Condition No. 21 - Gravel Management and Woody Debris Plans to Benefit NFS Resources

The Licensee shall develop and file with the Commission within one year of license issuance, a Gravel Management Plan and a woody debris routing procedure that is approved by the Forest Service.

1. Gravel Management Plan:

Gravel augmentation shall require the addition of a minimum of 624 tons of gravel at a maximum cost of \$15,000 per reach per year for materials and placement (adjusted annually for inflation at the consumer price index (CPI) rate). The gravels to be used are to be clean, rounded and ranging in size from approximately 8-64 mm with a median size of approximately 25-35 mm.

At a minimum, the Gravel Management Plan shall:

- Identify proposed gravel placement locations near the upstream end of the reaches or at other agreed upon locations.
- Identify facilities necessary for the placement of gravel. Cost for these facilities shall be in addition to the materials and placement costs identified above.
- Include an adaptive management component to allow non-delivery of gravels in non-spill years or in years when spill is insufficient to mobilize the gravels from the placement sites.

The plan shall also include a monitoring component that is integrated into the Biological Monitoring Plan in Condition 23 in terms of species surveyed, timelines, and cost. The monitoring component shall include at a minimum: 1) pre-augmentation monitoring the first 4 years (or for a time period consistent with the Biological Monitoring Plan) after license

issuance, 2) post augmentation monitoring the year augmentation occurs, and 3) periodic monitoring every 4 years (or a period consistent with the Biological Monitoring Plan) for the life of the license. Monitoring shall evaluate the physical changes from gravel augmentation and biological population trends of species that are affected by the gravels, specifically trout, hardhead, and macroinvertebrates. The monitoring shall be conducted in agreed upon transects located in all river reaches, but not throughout the entire length of the river reaches.

During the Annual Consultation Meeting required by Condition 2, the Forest Service will review monitoring results and discuss any needed changes to the Gravel Plan.

2. Large Woody Debris Management Plan

Licensee shall develop and implement an operating procedure to facilitate the passage of woody debris over the Pit 3 spillway during spill events. The Licensee shall provide the Forest Service a copy of the documentation for the procedure for approval.

Condition No. 22 - Water Quality and Temperature Monitoring Plan for Affected NFSL

The Licensee shall within one year of license issuance develop a water quality monitoring plan to assess the affects of new instream flows on water quality in project reservoirs and project affected river reaches. The water quality monitoring plan elements shall at a minimum include but not necessarily be limited to:

- Continuous water temperature monitoring,
- Periodic measurements of dissolved oxygen,
- Periodic Lake Britton temperature and dissolved oxygen profiles,
- Documentation of procedures used to meet water-related Best Management Practices (BMPs).

The Licensee shall prepare the plan after consultation with the Forest Service, State Water Resources Control Board, California Department of Fish and Game, and U.S. Fish and Wildlife Service.

The Licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations of the completed plan after it has been prepared and provided to agencies, and specific description of how agencies' comments are accommodated by the plan. Upon Commission approval, the Licensee shall implement the plan.

Condition No. 23 –Biological Resources Management Plans for Mitigating Project Effects to NFS Resources

The plan components discussed below should be combined, as appropriate, to facilitate monitoring efficiency and cost effectiveness. The plans should incorporate monitoring elements from other Resource Conditions including Condition 21 (Gravel augmentation), Condition 22 (Water quality monitoring), and Condition 26 (Recreation) and include Forest Service approval

for affected NFS resources. The implementation schedules shall also be coordinated so that the various components of biological resource monitoring are coordinated in time and location.

a. Biological Resources Program Technical Review Group

Licensee shall, within 3 months of issuance of a new project license, establish a Biological Resources Program Technical Review Group (TRG) for the purpose of: a) consulting with the Licensee in the design of management and monitoring plans, b) review and evaluation of data, and c) developing adaptive management or other recommendations, as required by Conditions No. 17, 21, 22, 23, and 26. The TRG will be composed at a minimum, of specialists from the Forest Service, California Department of Fish and Game, California State Water Resources Control Board, Fish and Wildlife Service (FWS), National Park Service (NPS), the Pit 3, 4, & 5 Project Licensee, Tribal Governments, and NGO's whom have expressed an interest in participating. The group's meetings will be open to the public. The Licensee shall maintain and make public, records of consultation, and shall forward those records with any recommendations to the appropriate agencies and the Commission. The group shall establish communication protocols to facilitate interaction between group members, which allow for open participation, peer review, and communication between all parties.

b. Fish population trend and condition monitoring in project reservoirs and river reaches

Within six months of license issuance the Licensee shall in consultation with the TRG prepare a plan for monitoring fish population trends and fish condition factors in the Pit 3 and 4 Project bypassed reaches and reservoirs. At a minimum the monitoring plan shall identify which species are to be monitored, sampling and data analysis protocols, and reporting schedules. The monitoring shall be consistent with pre-licensing studies for comparative purposes and shall attempt to standardize sampling protocol to ensure comparability of results. Sampling shall occur at least once every three years (or for a period determined by the TRG to be sufficient that is consistent with other monitoring requirements) during the first decade after license issuance and then at least once every four years thereafter. Additionally, the Licensee shall conduct benthic macroinvertebrate population robustness, feeding group and tolerance/intolerance trend monitoring in the Pit 3 and 4 bypassed reaches on a schedule recommended by the TRG.

An element of the plan shall include an adaptive management strategy to incorporate an entrainment study if needed. Prior to initiation of an entrainment study, the results of fish population trend monitoring results would need to indicate, either directly or indirectly, that ongoing entrainment may be a significant contributing factor toward a substantive downward trend in the affected species' populations. If a trend towards listing is indicated for FS special status species, the Licensee shall discuss with the TRG the possible initiation of statistically meaningful entrainment studies. The studies would follow procedures developed by the Licensee and agreed to by the Forest Service and other consulting agencies and will occur at the Pit 3 and Pit 4 tailraces.

A draft technical report shall be prepared following completion of each sampling effort. In addition to describing the results, the report is to compare results with those of previous

surveys. The fish-based sampling shall discuss implications regarding trends in fish abundances, trends for entrained FS special status fish species, changes to bald eagle prey species, and any indication that bass are moving into project reaches. The benthic macroinvertebrate sampling report shall discuss any changes over time regarding the composition of functional feeding groups, overall population heterogeneity and robustness, and pollution tolerance/intolerance trends.

Upon Commission approval, the Licensee shall implement the plan.

c. Foothill Yellow-Legged Frog (FYLF) Monitoring Plan:

Within one year of license issuance the Licensee shall in consultation with the TRG prepare a foothill yellow-legged frog (*Rana boylei*) monitoring plan. The Plan and schedule shall include the following two phases: 1) An initial annual study period (length to be determined by the TRG during review of information at annual consultation meetings, but for at least four years), following initiation of the new flow regime required by this license. 2) Incremental monitoring of FYLF every 4 years (unless revision is recommended by the TRG) after the completion of the initial study period. Do not use previously identified potential breeding sites in this monitoring, unless actual breeding activity has occurred at that site.

At a minimum the two phases of the study should include and/or address, but not be limited to, the following:

- Surveys for Foothill yellow-legged frog distribution in the Pit 4 Reach throughout the spring and summer to determine presence and life stage development as well as distribution or presence of Cascades Frogs and/or FYLFs in the Pit 3 reach.
- A more thorough search during the spring breeding season to identify population centers / breeding sites (other than Deep Creek) and count numbers of clutches found.
- Descriptions of the physical features of all identified frog breeding sites including substrate, water temperatures at the onset of egg deposition, vegetative cover, water velocities at egg deposition sites, canopy categories, patch size, channel habitat type, evidence of predation, etc.
- Determination of whether changes in instream flows result in breeding in newly inundated margins, or utilization of old sites that are now deeper.
- Assessments of whether the new breeding sites: 1) connect with the summer lower flow channel; 2) remain as disconnected off channel water bodies; or 3) dry up entirely.
- Return visits to breeding sites and adjacent low flow areas that may be tadpole-rearing habitat to assess survival of tadpoles to metamorphosis. Beginning after hatching of larvae, revisit a subset of breeding sites every 3 weeks to determine survival and time of metamorphosis. To ensure comparability of density estimates, time and area constrained searches shall be used. This monitoring data will also be relevant to determining timing of young of the year population metamorphosis (full tail reabsorption).
- Estimates of the number of adults at the onset of breeding at each breeding site.
- Monitoring of the time from egg deposition to hatching.
- Monitoring of tadpole numbers and life stage development using K. L. Gossner (1960) life stage categories.

- Monitoring of water temperatures annually in March through May to determine at what temperature breeding initiates and terminates. This information shall be developed into a predictive tool in future years to avoid untimely spills or flow fluctuations that could detrimentally affect FYLF recruitment.
- Determination of whether the high tadpole mortality observed in 2002 was due to a water quality factor or predation. Predator-free tadpole enclosures shall be established at relatively remote sites (unlikely to be found by anglers) to monitor survival.
- Include the component under “Vegetation Management Plan” for removal of overhead canopy.
- Take advantage of non-planned spring/summer high flow events to determine any correlation between these spill events and changes in tadpole or metamorph numbers from years when these events did not occur.
- Take advantage of the naturally (or project induced) receding spring hydrograph to determine flow vectors at known breeding sites and their changes with flows.
- Observations where no activity has occurred (i.e. “zero data”).
- Reporting of survey & monitoring results.

Upon Commission approval, the Licensee shall implement the plan.

d. Western Pond Turtle (WPT) Monitoring Plan

Within one year of license issuance the Licensee shall prepare a Western Pond Turtle (*Clemys marmorata*) monitoring plan in consultation with the TRG. At a minimum the study should address:

- Establishment of a study schedule including an initial study phase for a defined period of time and follow-up monitoring on a defined schedule, as for FYLF above.
- WPT distribution within the project.
- Estimate of age distribution of the turtle population.
- Reporting of results to resource agencies.

Upon Commission approval, the Licensee shall implement the plan.

e. Interagency Bald Eagle Management Plan

Within six months of license issuance, the Licensee shall convene a collaborative team composed of the Fish and Wildlife Service, FS, California Department of Fish and Game, the California Water Quality Control Board, and Pit River Tribe to revise and update the Interagency Bald Eagle Management Plan as needed. The plan shall at a minimum consider and address the following elements:

- 1) Annual monitoring of nest productivity
- 2) Identification of disturbance factors and appropriate actions needed to minimize disturbances including recreational use, project operations, timber harvest, road maintenance, etc. Consider actions such as:
 - Buffer zones around each known nest territory.
 - Potential water surface zoning of project reservoirs with respect to watercraft use.

- Limited operating periods for industrial operations, recreational activities, or other disturbances identified.
- 3) Coordination of Licensee and Forest Service land management activities within bald eagle nest territories in the Project area, such as timber harvest, mining, woodcutting, etc.
- 4) Periodic monitoring, in conjunction with recreation monitoring, of human use patterns to discern human/bald eagle interaction conflicts, including monitoring of watercraft use on areas of Lake Britton near nests.

The plan shall be submitted to the Commission within two years of license issuance. Upon Commission approval, the Licensee shall implement the plan.

f. Terrestrial Wildlife Mitigation & Monitoring plan:

Within one year of license issuance the Licensee shall prepare in consultation with the TRG a wildlife mitigation and monitoring plan to monitor project affected terrestrial Forest Service special status species (i.e. Forest Service sensitive, survey and manage, and management indicator species). At a minimum, the plan shall include and address the following monitoring elements:

- Occupation and population trends at five-year intervals (or an interval recommended by the TRG) of the Lake Britton bank swallow colonies.
- Annual monitoring of known peregrine falcon nest territories, surveys of potential peregrine falcon nesting habitats within or adjacent to the project area for new nesting territories until it is determined in consultation with the TRG that monitoring is no longer necessary. Unless modified during the development of this plan, a Limited Operating Period (LOP) shall be in effect from February 1 to August 15 from the nest site to a distance of $\frac{1}{2}$ to $\frac{3}{4}$ mile out from the nest (dependant upon Forest Service biological evaluation of the site). The LOP would apply to those activities that could be scheduled including regular maintenance actions and irregular activities, such as the testing of sirens or cutting of hazard trees along roads and powerlines. The LOP does not apply to emergency actions.
- Periodic monitoring as determined by the TRG throughout the period of the license to determine if Townsend's big-eared bats or other special status bats utilize Project facilities.
- Reporting of survey & monitoring results.

Mitigation measures to be implemented by the Licensee include:

- Continuation of the speed restriction zone at Upper Lake Britton, west of the gasline crossing where it currently exists.
- If goshawks are found during pre-disturbance surveys, limit operating periods around the active nest site (200 acres) from February 1 through August 15 or until the young have fledged.
- Protection of known sites of survey and manage molluscs (categories A, D, and E).
- Within one year of license issuance the Licensee shall design and install a gate on the Pit 4 Tunnel Adit that will allow bat passage and prevent public access to the tunnel.

The Licensee shall obtain Forest Service approval concerning the design and timing of the installation.

- The Licensee shall conduct pre-construction surveys for Forest Service special status species. The surveys shall follow standard approved protocols or protocols approved by the Forest Service if no standard protocol exist at the time. The results of the surveys shall be utilized to determine mitigation measures necessary to protect Forest Service sensitive species.

Upon Commission approval, the Licensee shall implement the Plan.

g. Vegetation & Noxious Weed Management Plan

Within two years of license issuance, the Licensee shall file with the Commission a vegetation and noxious weed management plan developed in consultation with the TRG, Shasta County Agricultural Commissioner and California Department of Food and Agriculture. At a minimum, the plan should include two components: a Noxious Weed Plan and a Vegetation Management Plan. Noxious weeds will be those weeds defined in the California Food and Agriculture code, and other species identified by the Forest Service.

1) The Noxious Weed Plan will include and address the following elements:

- Noxious weed treatment (aquatic and terrestrial) within the project boundary and adjacent to project features including recreation facilities, roads, and distribution and transmission lines.
- Inventory and mapping of new populations of noxious weeds using a Forest Service compatible database and GIS software. The Noxious weed GIS data layer will be updated periodically and shared with resource agencies.
- Action and/or strategies to prevent and control spread of known populations or introductions of new populations, such as vehicle/equipment wash stations.
- Develop a schedule for eradication of all A, B, Q and selected other rated invasive weed species, designated by resource agencies.
- New infestations of A& B rated weeds shall be eradicated within 12 months of detection. (A, B, C, & Q ratings refer to the California Department of Food & Agriculture Action Oriented Pest Rating System).
- At specific sites where other objectives need to be met (e.g. recreational use) all classes of noxious weeds may be required to be treated.
- On-going annual monitoring of known populations of noxious weeds for the life of the license in locations tied to Project actions or effects, such as road maintenance, at project facilities, O&M activities, recreational areas, new construction sites, etc. to evaluate the effectiveness of re-vegetation and noxious weed control measures.
- Monitoring will be done in conjunction with other project maintenance and resource surveys, so as not to require separate travel and personnel. Monitoring information, in database and GIS formats, will be provided to the Forest Service as part of the annual consultation on affected National Forest resources (Condition No. 2). To assist with this monitoring requirement, training in invasive plant identification will be provided to Project employees and contractors by the Forest Service.

- Licensee shall restore/revegetate areas where treatment has eliminated noxious weeds in an effort to eliminate the reintroduction of noxious weed species.
 - Project-induced ground disturbing activities shall be monitored annually for the first 3 years after disturbance to detect and map new populations of noxious weeds.
 - The plan will include an adaptive management element to implement methods for prevention of aquatic noxious weeds, as necessary. These actions may include, but may not be limited to: 1) public education and signing of public boat access, 2) preparation of an Aquatic Plant Management Plan approved by the Forest Service, and in consultation with other agencies, and 3) boat cleaning stations at boat ramps for the removal of aquatic noxious weeds.
- 2) The Vegetation Management plan shall include and/or address the following elements:
- Hazard tree removal and trimming;
 - Powerline/transmission line clearing;
 - Vegetation management for habitat improvement (e.g. provision of FYLF breeding habitat);
 - Revegetation of disturbed sites;
 - Soil protection and erosion control, including use of certified weed free straw; and
 - Establishment of and/or revegetation with culturally important plant populations.
 - Use clean, weed free seed with a preference for locally collected seed.
 - Timing of activities shall account for limited operating periods for peregrine falcons, bald eagles, and northern goshawks (refer to Conditions 23 (e) and 23 (f)).

Upon Commission approval, the Licensee shall implement the plan.

Condition No. 24 – Cultural Resources Management Plan

The Licensee shall file with the Commission, within one year following license issuance, a Cultural Resources Management Plan (CRMP), approved by the Forest Service, for the purpose of protecting and interpreting heritage resources. The CRMP is tiered to a Programmatic Agreement, to which the Forest Service will be a signatory, as defined by 36 CFR 800, and implements regulations of the National Historic Preservation Act. The Licensee shall consult with the State Historic Preservation Officer, Native American Tribes, Forest Service, and other applicable agencies and communities during the preparation of the Plan. The CRMP shall accurately define the area of potential effects, including effects of implementing Section 4(e) conditions, and shall take into account Project effects on the National Register Lake Britton Archaeological District, National Register properties, Native American traditional cultural values, and Project-induced recreational impacts to archaeological properties on or affecting National Forest System lands. The CRMP shall also provide measures to mitigate the identified impacts, including a monitoring program, a patrolling program, and management protocols for the ongoing protection of archaeological properties.

The new National Register Nomination for the Lake Britton Archaeological District shall be filed within one year of license issuance. If, prior to or during ground-disturbing activities or as a result of project operations, items of potential cultural, historical, archaeological, or

palaeontological value are reported or discovered, or a known deposit of such items is disturbed on National Forest System lands, the Licensee shall immediately cease work in the area affected. The Licensee shall then: (1) consult with the California State Historic Preservation Officer (SHPO) and the Forest Service about the discovery; (2) prepare a site-specific plan, including a schedule, to evaluate the significance of the find and to avoid or mitigate any impacts to sites found eligible for inclusion in the National Register of Historic Places; (3) base the site-specific plan on recommendations of the SHPO, the Forest Service, and Secretary of the Interior's Standards and guidelines for Archaeology and Historic Preservation; (4) file the site specific plan for Commission approval, together with the written comments of the SHPO and the Forest Service; and (5) take the necessary steps to protect the sites from further impact until informed by the Commission that the requirements have been fulfilled.

Upon Commission approval, the Licensee shall implement the plan.

Condition No. 25 - Project Patrol for Resource Protection of NFS Lands

Within one year of license issuance the Licensee shall, after review by the Forest Service, file with the Commission a plan for providing a full time patrol of the Project, including National Forest System lands within the project area or affected by project facilities, for purposes of resource protection. At a minimum the plan shall provide for routine and regular physical inspections of affected lands, project facilities, and structures including implemented protection, mitigation and enhancement measures and the provisions of the Cultural Resources Management Plan required by the Project license. The plan shall also include a description of reporting responsibilities including observed violations of laws and communications with law enforcement agencies as well as required documentation of inspections.

Condition No. 26 - Recreation Management Plan

Within one year of license issuance the Licensee shall file with the Commission a Recreation Management Plan (RMP) developed in consultation with the Forest Service, National Park Service, California Department of Parks and Recreation, the US Fish and Wildlife Service, California Department of Fish and Game, State Water Resources Control Board, the Pit River Tribe, and other interested parties. The purpose of this plan is to mitigate for, and manage impacts to NFS lands in and near the project, to assist users of all abilities in accessing opportunities in the project area and associated facilities, to manage potential impacts to NFS lands due to overcrowding and displacement of visitors to areas with sensitive resources. The Licensee shall obtain Forest Service approval on the components of the Plan which affect NFS lands and final designs for any facilities on National Forest System lands prior to submitting to the Commission for approval. After Commission approval, the Licensee shall implement the Plan. At a minimum, the RMP shall address the following specifying location, design, structure, and schedules for completion:

Recreation Facilities Maintenance, Improvement, and Expansion

General

Licensee will consider sensitive resources in consideration of location, design, and construction timing for all actions below. This includes, but is not limited to, limited operating periods for peregrine falcons, bald eagles, and goshawks, noxious weed precautions, location of cultural resources, and visual quality impacts.

Lake Britton Developed sites:

- 1) **Dusty Campground** - On a schedule approved by the Forest Service, Licensee shall improve the existing facility as follows:
 - a. Add picnic tables to all campsites; ADA campsite should have an appropriate style picnic table to accommodate wheelchairs.
 - b. Modify one campsite and adjacent restroom for accessibility, install ADA signage, and construct an accessible path for lake access consistent with federal ADA standards.
 - c. Addition of up to 4 more overnight sites.
 - d. Maintenance and expansion of beach areas.
 - e. Designation of a swim area.
 - f. Provide potable water.
 - g. Better define the parking areas for day use to help with overcrowding issues and parking competition with overnight users; Licensee to monitor the day-use parking and encourage compliance with any limitations; in consultation with the Forest Service, consider charging a parking fee.
 - h. In coordination with the Interpretive and Education Plan, provide information to users about alternative sites for overnight camping and for day-use opportunities at and near the Project.

Licensee shall continue to operate the campground under agreement with the Forest Service.

- 2) **Jamo Boat Ramp** – within two years of license issuance, in order to improve access for visitors to the National Forest areas of the project, Licensee shall, in consultation with the Forest Service,
 - a. Designate parking spaces for vehicles with trailers using signs and asphalt markings. Require site host or other Licensee employees to monitor for compliance.
 - b. Provide a convenience picnic table between the restroom and the shoreline. Evaluate the use of this convenience table during high use season and, should it cause the launch ramp area to become more congested, consult with the Forest Service and interested stakeholders about repositioning or removal.

- c. Improve the existing boat ramp and the fishing platform to increase accessibility. Use guidelines in "Accessible ramps and boarding platforms for boaters" report (Tech Rep. 0023-2837-MTDC) and the ADA Accessibility Guidelines for Buildings and Facilities; Recreation Facilities (36 CFR Part 1191) or other updated guidelines as applicable;
 - d. Provide a potable water source at this site or Pines Picnic Area that can be accessed by recreationists at all times.
- 3) **Day-Use Opportunities** – The Licensee shall provide additional day-use capacity around Lake Britton, specifically beach day use areas, in consultation with the Forest Service and other interested parties. This will help mitigate existing and prevent future negative impacts to National Forest resources. The Licensee should concentrate on enhancing existing sites/disturbed areas before any new locations are considered. The amount of capacity shall increase by 100 People at one time (PAOT) within 3 years of license issuance since day-use beach areas are currently reaching capacity. Possible locations include the existing Pines Picnic Area, the North Ferry Crossing, and North Shore Campground. Day use areas shall include the following features:
 - Any new day-use beach area shall have regularly maintained beach sand if needed,
 - access to the shore designed to minimize erosion,
 - restrooms on site or nearby,
 - access by road or boat,
 - designated parking if access is by road,
 - trash collection, and
 - regular monitoring by a host or Licensee employee.
- 4) **New Overnight Capacity** – Licensee shall provide 25% more public overnight developed camping units over the life of the license (an increase of 39 sites). At least half of that capacity shall be added in the first 10-year period and the balance provided within 15 years of license issuance. New overnight sites in this provision should reflect the current or planned development level of an existing campground. Any new campgrounds will be development level 4 or 5. Additions to capacity should be within the project boundary or, within a 1-1/2 mile radius of the project waters. New capacity shall emphasize expansion of existing sites/use areas over development of new sites/use areas. An existing site is defined as a designated and managed recreation site containing man-made improvements. A use area is defined as an area being heavily utilized by the public such that its natural character has been heavily impacted. Examples are loss of vegetation due to parking and trampling, existence of makeshift facilities such as campfire rings, shelters, sanitation; considerable evidence of trash.

Lake Britton Dispersed sites –

In order to manage recreational access by visitors to NFS lands and mitigate negative impacts to National Forest resources, the Licensee within 5 years of license issuance, shall:

- Improve usability of the car-top boat launch at the gas line crossing by improving the road into the site to a Forest Service maintenance level 3 or higher and adding sanitation measures;
- Close parking area 6 on the north side of the lake,
- Maintain recreational access to National Forest System lands and Licensee lands on the south side of Hat Creek, and
- Develop an ADA accessible path, compatible with the Recreation Opportunity Spectrum, for access for fishing on the riverine portion of the upper lake at either the Fish Barrier or an alternate upstream location.

Licensee shall also work with the Forest Service and interested parties to develop measures to maintain and upgrade existing trails around Lake Britton, including Clark Creek Falls Trail, in order to decrease erosion and increase usability.

Pit 3 and Pit 4 Reaches:

In areas accessed by project facilities or affected by the project, the Licensee shall, in consultation with the Forest Service, include in the Recreation Management Plan a section addressing general dispersed areas. This section should specifically speak to opportunities and problems unique to the Pit reaches such as fire prevention, sanitation, parking, “site creep”, crowding, and length of stay limits.

Developments and Improvements – Except where otherwise noted, within 3 years of license issuance, the Licensee shall provide the following improvements:

1) Trails and trailheads

- Construct a 10-vehicle trailhead parking lot at Powder Spur and improve the parking at the Talus Siren site by removing debris to level the area.
- Provide potable water, sanitation, and trash collection to at least one location in each reach.
- Construct and maintain, to standards acceptable to the Forest Service, river-access hiking trails at Powder Spur, Delucci, Rock Creek, Malinda Gulch, and Oak Flat or at other locations as agreed to by the Forest Service. Trails shall be designed and maintained to accommodate foot traffic, alleviate erosion, and improve hiker safety.
- Trailhead parking at each trail listed above shall be improved to provide for a level parking surface that does not intrude into the roadway. Signing designating the trails and parking will be installed and maintained.

2) Pit 4 Reservoir public access

- Pursue a change in the County ordinance to allow public boating use, limited to non-motorized boats, battery powered trolling motor boats, and float tubes and, include a 5 mph speed limit.

- Sign and modify the unimproved boat ramp at the Pit 4 reservoir currently used by the Licensee in order to accommodate any new use permitted under Shasta County ordinance.
 - Improve the Pit 4 reservoir boat ramp site by adding picnic tables and trash collection.
- 3) Whitewater boating access**
- Develop and maintain two whitewater boating access points in each river reach consisting of a “put in” and “take out”. Access points can be coordinated with other developments listed above.
- 4) New day-use fishing access at Pit 3 Powerhouse**
- Design and construct a day-use fishing access near the Pit 3 powerhouse. The site shall have ADA accessible fishing access, a toilet, potable water nearby, trash collection, and improved parking. In addition to facilities to be designed and constructed, Licensee shall work with the Forest Service and CDF&G in this vicinity so that the Day Use Area will not conflict with the designated Wild Trout Fishery regulations.
- 5) Pit 4 Reach Scenic Overlook**
- Develop a site plan to convert the existing 240,000 cubic yard spoil pile #4D covering 3.35 acres on NFSL into a scenic canyon overlook. The Licensee shall cease any further use of this site as a disposal site. The site plan shall include measures that address:
 - Removal of all non-native materials visible on the surface of this pile.
 - Stabilization and erosion control to prevent further erosion into the active river channel and avoid further collapse of the southern canyon wall.
 - Implementation of Forest Service Road Management Objectives (RMO's) to modify the road on the back of the pile that accesses the river (see License Condition #27 Roads).
 - Revegetation with native plants, and control of star thistle invasion.
 - Design and construction of parking and viewing area for scenic overlook.
 - Appropriate interpretation as coordinated with the Interpretation and Education plan.
 - A sampling plan for 5 years of testing at annual intervals to ensure there are no longer hazardous materials in the pile that are leaching into the ecosystem, unless completed tests can conclusively demonstrate that there are no hazardous materials buried in the pile. If hazardous materials are later discovered in the pile, the Forest Service reserves the right to require the Licensee to clean up or totally remove this pile.
- 6) Ruling Creek Dispersed Camping Area**
- Licensee shall develop and implement a site improvement plan consistent with the Recreation Opportunity Spectrum (ROS) for the Ruling Creek Dispersed Camping Area. At a minimum, the plan shall include or address the following elements:
 - Installation and maintenance of a portable, accessible, vault-style toilet (such as a CXT toilet);
 - Creation of camping/parking locations;

- Installation of metal fire rings;
- Improved pedestrian access to the river;
- Implementation of noxious weed mitigations as coordinated with the vegetation and noxious weed management plan;
- Elimination of the use of the site as spoil pile disposal area;
- Removal from or incorporation of existing road spoil material into site design for this recreation site;
- Relocation of existing roadbed away from rivers edge, with new road location based on recreational access needs; and
- Erosion control/stabilization measures for site disturbance and relocation of the existing roadbed.

Water Surface Access and Management

Within one year of license issuance and, in consultation with the Forest Service and other interested stakeholders, the Licensee shall do the following:

Lake Britton: move the “no boating” buoy line at the Ferry Crossing as close as is practicable to the dam to increase the lake area available to recreational watercraft.

Reservoir Water Surface Zoning Plan: create a plan which documents existing speed zones and displays recommended changes. The Licensee shall recommend changes in county ordinances for Shasta County approval to implement a speed management zone for the newly opened area (above), request a change in the Highway 89 bridge “no ski” zoning to a 5 mph speed limit from the bridge to the end of the narrow channel (“the narrows”), and, Licensee shall seek no changes to the existing 5 mph speed restriction in Upper Lake Britton/Hat Creek area. Licensee shall pursue with the county additional modifications recommended during annual monitoring meetings or, as the result of other license planning efforts.

Pit 4 Reservoir: plan and recommend changes in county ordinances for Shasta County approval to open the Pit 4 reservoir to non-motorized boats, battery powered trolling motor boats, and float tubes between August 1 and December 31.

Information, Education, and Interpretation Plan

Within two years of license issuance the Licensee shall file with the Commission a Plan to provide for Information, Education, and Interpretation (I&E Plan) needs of the project developed in consultation with the Forest Service, California Department of Parks and Recreation, National Park Service, US Fish and Wildlife Service, California Department of Fish and Game, the Pit River Tribe and interested parties. At a minimum, the I&E Plan shall include themes, design, audience, delivery methods, and a schedule for implementation. The Forest Service will approve information displayed on NFSL.

Specific projects include:

- Informational kiosks at 5 Corners, Pit 3 powerhouse, Big Bend Interagency Fire Station, Jamo Boat Ramp, or other locations, as agreed.
- Interpretive or orientation signs at Hwy 299 and the Red Cinder Road, Hwy 299 and Sand Pit Road, Pit 3 dam, Big Bend road and Pit 5 Powerhouse Road, 5 Corners, Pit 4 dam scenic overlook, or other locations as agreed.
- Brochures and Website information should be coordinated with non-recreation resource areas and could include topics as: Watchable wildlife, Endangered wildlife, fisheries, protection of cultural resources, history and prehistory of the area, project operations, noxious weeds, proper recreational behavior (Leave no Trace), and Fire Prevention.

Streamflow Information

The Licensee shall, beginning as soon as reasonably feasible and no later than one year after license issuance make available to the public the recreation streamflow information listed below. Unless otherwise noted, the streamflow information shall be available to the public via toll-free phone and Internet, which may be accomplished through a third party. The streamflow information protocols may be modified upon mutual agreement of the Licensee, Forest Service, and responsive stakeholders, and acceptance by FERC. The following information shall be made available:

- a. The hourly average streamflow in the Pit River below each of the Pit 3 and Pit 4 dams for the current day and the past seven days. The flow information may be measured, calculated or a combination of the two. The flow information shall be posted within four hours of collection. Streamflows shall be rounded up to the nearest 50 cfs, and all plots and tables showing these data shall be labeled: "These provisional data have not been reviewed or edited, and may be subject to significant change."
- b. By January 5, the proposed dates and magnitude for any freshet flow, if applicable, planned to be provided by the Licensee, with updates by February 15 and within two days of any changes in plans.
- c. By July 1, the proposed dates for any recreation streamflow releases, with updates at least two weeks and one week in advance of each proposed date. The Licensee shall also notify the community of Big Bend and the Big Bend Rancheria of any recreational streamflow releases.

In addition, the Licensee shall, as soon as reasonably feasible and no later than two years after license issuance, install and maintain one simple staff gage/depth indicator at the following locations: Licensee gage PH30 below Pit 4 Dam, Licensee gage PH27 at Big Bend Bridge, and provided a suitable location is identified in consultation with FS and American Whitewater, below Pit 3 Dam. The Licensee shall make a good faith effort to locate the staff gages/depth indicators near public access locations so they are easily

accessible for public reference. The Licensee shall provide a means at each staff gage/depth indicator to reasonably correlate staff gage/depth indicator readings to cfs.

Recreation Monitoring and Reporting Plan - Within one year of license issuance, the Licensee shall, in consultation with the Forest Service, California Department of Parks and Recreation, National Park Service, US Fish and Wildlife Service, and the Water Quality Control Board, complete a Recreation Monitoring and Reporting Plan (RMRP) as follows:

1. The RMRP shall include but not be limited to monitoring changes in kinds of use and use patterns on water surfaces and land, user surveys as to preferences in recreational activities, kinds, and sizes of recreational vehicles including boats, preference for day use versus overnight use, and recreation user trends within the project area. In addition, the Licensee shall periodically monitor boat use numbers, activity types, and use areas from Memorial Weekend through Labor Day on all areas of Lake Britton. Licensee shall work with the Forest Service and other interested stakeholders to determine the methodology for the data collection including frequency and location.
2. On a time schedule to coincide with the FERC "Form 80" report, the Licensee shall produce a Report on Recreational Resources which will summarize the information above. The Report shall include a summary of regional and statewide trends in recreation based on available surveys and reports. Survey methods shall be reviewed and approved by the Forest Service, and other interested stakeholders prior to implementation. The Report on Recreational Resources shall also comply with the Commission's regulations at 18 CFR Section 8.11 (Form 80) and shall be filed with the Commission after consultation with Forest Service and other interested stakeholders. The Forest Service reserves the right, after notice and opportunity for comment and administrative review, to require changes in the project and its operation through revision of the 4(e) conditions that require measures necessary to accomplish protection and utilization of National Forest resources identified as a result of those surveys.
3. Licensee shall, every six years (coinciding with the Commission's recreation inspection schedule), consult with the Forest Service, appropriate agencies, and interested stakeholders to review and adjust project-wide recreation management objectives. This consultation shall take the form of an in-person meeting within reasonable distance to the project. This meeting could be coordinated with the Annual Consultation meeting required in Condition #2. This review shall be based on the Report on Recreational Resources and any other results from law enforcement monitoring, and other applicable study and monitoring results. The Report and other monitoring results shall be made available to the agencies and interested stakeholders not less than 15 days prior to the scheduled meeting. The review shall address, as a minimum, the following factors:
 - Capacity; including developed and dispersed sites, roads, trails, water bodies, and river reaches,

- Kinds and condition of facilities,
- Kinds, quality, quantity, and range of opportunities,
- Health and safety,
- User and resource conflicts,
- Discussion of possible strategies and adjustments to management of facilities and dispersed areas in order to mitigate negative impacts, and
- Changes in ADA guidelines and possible modifications to facilities planned or constructed.

Recreational improvements in the project reaches shall be considered every six years through adaptive management using trend data and reports in conjunction with user satisfaction surveys, capacity use figures, and identification of resource impacts as a basis for change. Changes could include expanding or improving existing recreational areas, developing new areas, changing management requirements, limiting use, closing roads, or other measures as determined appropriate to provide for the recreational needs commensurate with the resource values.

Condition No. 27 – Roads and Facilities Management Plan

Within one year of license issuance the Licensee shall file with the Commission a Roads and Transportation Facilities Management Plan for National Forest system roads or Project roads affecting NF resources. The plan shall incorporate FS standards (i.e. FS manuals and handbooks) for design, construction, operation, and maintenance and be approved by the Forest Service. Upon Commission approval, the Licensee shall implement the Plan and actions specified therein. At a minimum the Roads and Transportation Facilities Management Plan shall include the following:

A. Road Planning:

- A map(s) compatible with FS Travel Routes database showing all project and non-project roads, culverts, bridges, drainages, watering sources, disposal sites for organic materials, and disposal sites for surplus rock and soil from road maintenance within and adjacent to the project boundary including designation of use, season of operation, and public use.
- Identification of the uses (i.e. recreation, facility access) of the roads, and season of operation.
- An inventory of road and road facilities conditions including any construction or maintenance needs.
- Description of the types of materials allowed to be disposed of in the spoil pile.
- Description of how organic materials will be treated.
- Soil protection and erosion control measures including revegetation of disturbed sites and spoil piles to avoid noxious weed infestation and erosion (using only certified weed-free straw).
- A Water Quality Monitoring Plan that includes runoff management.
- A Traffic Safety plan.

- An adaptive management component to allow changes should use or standards necessitate.

B. Project Road Rehabilitation.

General Items:

- Include limited operating periods (LOPs) for sensitive wildlife resources when planning rehabilitation projects (see Condition 23 (f) as well as provisions to prevent the infestation and spread of noxious weeds (Condition 23 (g)).
- Develop a road rehabilitation implementation schedule to bring existing roads and associated facilities (i.e. culverts, gates, bridges, crossings, cribwalls, etc.) into compliance with Forest Service standards that achieve the Forest Service's Road Management Objectives (RMOs) for each road as listed in TABLE 1 (below). The schedule shall bring existing roads into compliance within 5 years of license issuance, with health and safety items shall be completed within the first year of implementation, water passage for resource objectives within the second year of implementation, road surfacing items within the third year of implementation, and all lower priority projects in year four and five after license issuance. Specifically:
 - Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.
 - Prevent chronic erosion to stream channels by installing proper drainage e.g. French drains, outsloping, rolling dips, waterbars, etc.
 - Provide for fish passage and proper stream function for all stream crossings that are identified as fish habitat areas.
 - All intermittent and perennial stream crossings shall accommodate a 100-year storm event and associated bedload and debris. Provide hydrologic information to verify calculations where requested by Forest Service.
 - All bridges shall be replaced or reconstructed to conform to AASHTO Standard specifications for Highway Bridges (latest edition) including guardrails. All bridge approaches must be paved to 50 feet either side.
 - Gates on NFS lands shall comply with FS standards for construction and signing.
 - Replace rotting log parking barriers with standard parking barrier devices, e.g. guardrails, concrete stops, etc.
 - Removal of all road spoil piles not currently located in approved areas on NFS to a location either off the Forest, or to a Forest Service approved disposal site. Removal area shall be revegetated with approved native (locally collected) seed to reduce invasion of noxious weeds. Monitor and eradicate noxious weeds as specified in the "Noxious Weeds Management Plan" license condition.
 - Reconstruct project roads to meet Forest Service road standards consistent with "Road Management Objectives", including shoulders, installing additional turnouts (with material matching that of the main roadbed), reconstructing sharp curves to meet standards for clearance and sight distance, and stabilizing cutbanks/fillslopes with cribwalls and other retaining structures to prevent road failure and excessive sedimentation to waterways.

Specific Items:

- At Ruling Creek curve, stabilize the riverbank to protect the road from failure at flood flows.
- Expand existing paved road from the Pit 3 Powerhouse (M.P. 5.8) to the Gravel Bar turn-off in the Pit 4 reach (M.P. 8.8).
- Bring the Pit 3 and 4 reach roads into compliance with above general conditions and Forest Service RMO's.

C. Road Operation & Maintenance (O&M):

- Develop an annual road operation and maintenance schedule for on-going needs to maintain Project roads on NFSL to comply with Forest Service standards and RMOs.
- Complete normal maintenance activities on an annual basis including: repair and replacement of damaged culverts identified in road logs, removal of existing vegetation to allow adequate sight distances, etc.
- Include any required LOPs for wildlife species and noxious weed prevention provisions in planning and performing maintenance activities.

Specific Items:

- Traffic use surveys shall be scheduled on a 6-year basis at Forest Service specified locations to determine the number and type of vehicles per day, describe study periods and reporting requirements, and to determine use trends. A minimum of 60 survey days/year shall be required. A road capacity and use review shall be conducted every 10 years to determine if the roads continue to meet current road management objectives.

Off-Highway Vehicle (OHV) and Vehicle Management Plan –

The Licensee shall within one year of the license issuance develop an Off-Highway Vehicle (OHV) and Vehicle Management plan in consultation with the Forest Service and the Pit River Tribe. At a minimum, the plan shall include:

- Identification of existing use patterns creating resource damage within the project area, including archaeological site disturbance.
- Restrictions and controls including seasonal closures to protect sensitive resources such as bald eagles, cultural resources, upland oak and riparian habitats.
- Rehabilitation of areas damaged by OHV use.
- Specifically address the Hat Creek Fishing barrier area where resource disturbance is occurring on Project lands and adjacent National Forest System lands, and the need for any permanent road closures.

Table 1 – Pit 3 and 4 Project Roads which are on or affecting NFSL

Road Name	FS Road Number	Location	Remarks
Pit 3 Reach Road	37N60Y	From 5 Corners to Pit 3 PH (Lassen National Forest-LNF)	Update Road Maintenance Objectives (RMO), Under special use permit
Rock Creek Penstock Road	37N60YA	From Pit 3 Reach Road to Penstock crossing (LNF)	RMO, Rolling dips
Pit 3 Surge Tank Road	360209UC01	Road behind Pit 3 powerhouse to surge tank (LNF)	Need to GPS road location. Need RMO.
River Road (Pit 4 Reach Road), FS#50	37N60Y	From Pit 3 PH to Pit 4 PH (Shasta-Trinity National Forest- STNF)	Needs RMO
Pit 4 Reservoir Spur 01	37N60Y A & B	Spurs extending north from Pit 4 reservoir in Township 36N, R2E, sections 4 & 9 (STNF)	Need RMO, possible disposal pile site.
Pit 4 Dam Spoil Pile Road	360208UC01	From Pit 4 Reach Road to the river on top of spoil pile #4D (STNF)	Need RMO
Ruling Creek Dispersed Site Road	360217UC01	From River Road (Pit 4 Reach Rd) through the Ruling Creek dispersed area (STNF)	Need RMO
Big Pine Deer Camp Road	360217UC03	From Pit 4 Reach Rd west of Ruling Creek into Big Pine Deer Camp (STNF)	FS System Road Level 2, need RMO
Gravel Bar Road	360217UC02	Off the Pit 4 Reach Rd just west of Pit 4 gage station (STNF)	Need RMO
Pit 4 Valve House Road	360115UC01	From Pit 4 Reach Rd to spoil pile #4P near Pit 4 Valve House (STNF)	Need RMO
Pit 4 Surge Tank Road	360115UC02	Spur from Valve House road to Pit 4 surge tank (STNF)	Need RMO.
North Shore Campground Road	37N61	From Clark Creek Road to North Shore Campground (LNF)	Under special use permit, needs RMO. Needs larger CG sign.
Dusty Campground Rd	37N59Y	From Hwy 89 through Dusty Campground (LNF)	Needs RMO. "Trailers not recommended" sign.
Lower Hat Creek "Loop" Road	36N09	From Hwy 299 to Hat Creek parking area adjacent to Hat Creek Fish Barrier (LNF)	Needs RMO
Bald Eagle Mgt Area Road	37N59Y	Between Warner Grade Road and Dusty CG, extension of FS road 37N59Y (LNF)	Closed at both ends – Level 1 road RMO needed
Gas Line Drafting Road	360312UC01	Road to the water drafting site on south side of Pit River near the PG&E DE mine (LNF)	Need RMO